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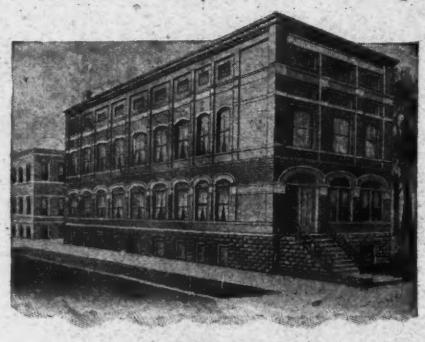

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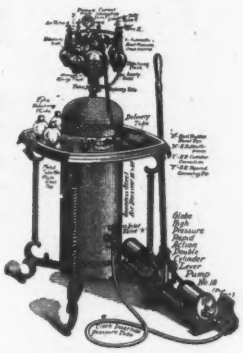

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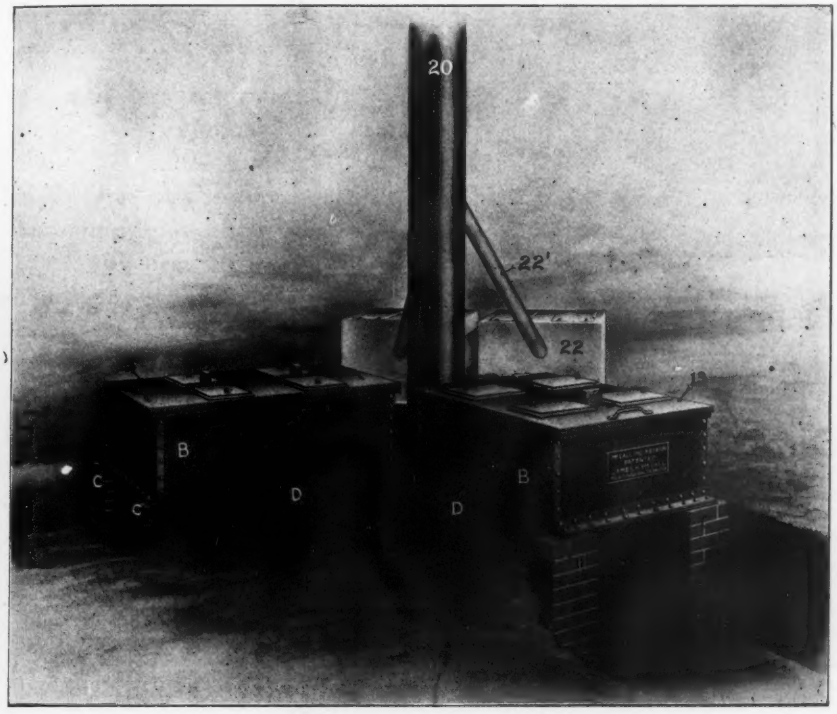

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SOUTHERN MEDICAL JOURNAL

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ORIGINAL CONTRIBUTIONS

TWO APPARENTLY NEW PHYSICAL SIGNS, WHEREBY NORMAL ORGANS MAY BE OUTLINED AND DISEASED CONDITIONS BE DIAGNOSTICATED, PARTICULARLY WITHIN THE CHEST, BY MEANS OF PALPATION.*

By F. M. POTTENGER, A.M., M.D., LL.D.,

Monrovia, California.

During the past year I have described two apparently new physical signs, the presence of which is determined by palpation.

This fact has caused confusion in the minds of some to whom I have described them; and, in order to show the difference between them and to prevent further confusion, I deem it best to describe the two signs accurately at the beginning of this paper before proceeding to their discussion.

These two signs are:

I. *Muscle Rigidity.* (1), (2), (3), (4). A feeling of resistance noticed on palpation of the muscles overlying inflammatory areas of the pleura and pulmonary parenchyma, due to—

1. Acute muscle spasm when the inflammatory process is active, and

2. Pathologic change in the muscle when the inflammation is chronic.

II. Different degrees of resistance on "light touch palpation" noted (5),

1. Over solid organs such as the heart and liver when compared with air containing organs such as the lungs or hollow organs such as the intestines, and,

2. Over foci of disease in the pleura and pulmonary parenchyma when compared with that over normal organs, due either to the disease process itself, or to the change in the muscle as described above, or to both.

From this statement of the two signs it can be seen, that while they are both elicited by palpation, they are entirely different.

Muscle rigidity is dependent entirely upon a pathological entity, while the difference in tissue resistance noted on "light touch palpation' 'is dependent upon the fact that different sensations are conveyed to the fingers when palpating the surface of the body overlying tissues of different density.

This statement shows clearly that the two signs are entirely different, both in their causation and determination.

I shall now proceed to discuss them in the belief that a thorough appreciation of them will be of great importance to clinical medicine.

My experience with *muscle rigidity* has been for the most part confined to the examination of patients suffering from pulmonary tuberculosis and its complication: but, as such, it has afforded me a wide clinical experience in the various affections of the chest. I have found muscle rigidity present in all instances where there was evidence of disease of the pleura or pulmonary parenchyma, lung abscess, high grade emphysema, pleurisy (acute

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with and without effusion and chronic with thickening of the pleura) and empyema.

The cause of the muscle spasm and the later pathologically changed muscle is most probably a nerve reflex in which the impulse travels from the inflammatory area in the thorax through the sympathetic filaments to the cord, where it is transmitted to the motor cells adjacent, thence out to the muscle. The inflammatory condition being constant and of long duration, the stimulant is constant and the spasm is tonic in character. As a result of this constant stimulation the muscle is unable to preserve its integrity and undergoes pathological change.

If the above is the real explanation of its causation, muscle spasm should give us a valuable differential diagnostic point in appendicitis, for we should have a spasm in the same muscles or portion of muscles, no matter where the inflamed organ is situated in the abdominal cavity.

I have designated this sign as *muscle rigidity* in order to comprise both the acute spasm and the chronic change.

Both the superficial and deep muscles are affected, and the interesting as well as important feature of the change is the fact that it seems to be confined very accurately to the muscles covering the portion of the pleura or lung affected.

The great value of this sign is dependent upon the fact that the muscle change is apparently co-extensive with the intra-thoracic disease, coupled also with the fact that tuberculosis usually begins at the apex of the lung where muscle spasm shows itself best and is easiest of detection. I know of no question of equal magnitude that is put up to the physician to decide as often as, whether or not active tuberculosis exists in the apex of a given lung; and I can further say that there are few questions that have to be decided by the physician with less data upon which to base his decision. Therefore, muscle change (acute muscle spasm in early active cases) is welcome, because theoretically, it should be present in all early, active lesions, and, practically, I believe it will be so found, for I have found it in all that I have so far examined. After the disease assumes a chronic and less active form the spasm is not so evident, but the pathological change is then present and still affords a valuable sign.

Clinically, the cases showing muscle rigidity may be divided into four classes:

1. Those having primary acute lesions. In these the spasm is greatest because the muscles being normal, they are able to respond to the stimulus with the greatest degree of contraction.

2. Those having chronic lesions of considerable extent. In these the rigidity is well-marked and the muscles present a doughy feeling to the palpating finger, owing to the fact that they have lost their normal elasticity.

3. Those having chronic lesions of considerable extent, which have again become the seat of an active process. Here the chronically changed muscles attempt to respond to the new stimulus and present a more or less successful attempt at spasm on the top of an old process.

4. Those having a small focus which is entirely quiescent or the seat of only slight activity. Here the change is so slight that it can easily be overlooked.

Muscle rigidity is best detected by examining the muscles of the two sides systematically, and comparing not only the same group of muscles of the two sides, but different groups of muscles on the same side. When the muscles are in spasm, or the lesion is extensive, the change will be detected quite readily after one has once fully understood the idea. The muscles should be examined carefully without making too heavy pressure.

Light Touch Palpation. While working out the physical sign of *muscle rigidity* in diseases of the chest, as described in the early part of this paper, I was impressed with the fact that there was a distinctly different sensation conveyed to the fingers when palpating over solid organs, such as the heart and liver,

from that conveyed by palpating over organs of less density, such as the lung and intestines. By careful observation I found that this difference was easy of detection, and, to my surprise, I found that it could be determined by a very gentle touch.

After examining many patients, I gradually evolved what seemed to me to be a practical method of determining this difference in resistance, and in order to make the name suggest the nature of the method, I have called it "Light Touch Palpation." (4)

Light touch palpation is not based on any new principle, but one which has been known to the medical profession as long as palpation and percussion have been in use.

Much of the data derived from palpation is clearly dependent upon the fact that tissues of different density, when palpated, produce sensations which are distinguishable by our sense of touch. Percussion, whether we depend upon sound or resistance, depends upon the fact that tissues of different density when percussed produce different sounds or different degrees of resistance; and data derived by the sensation conveyed to either the finger used as plexímeter or plessor or that derived by such methods as Ebstein's Touch Percussion, are clearly dependent upon the same principle as palpation. By these methods of percussion we attempt to feel the difference in density of the tissues by strokes. By percussion we have attempted to feel or examine deeper than seemed possible by palpation.

The liver, spleen and other abdominal organs have always been examined by palpation, but, as a rule, the method has been that of at least fairly deep pressure. I have only met a few men who used a method which in any degree approaches the one which I am describing for lightness of touch. In the chest, the different sensations noted over tissues of different density have also been noted by various observers, but so far as I know, no method that has been given to the profession which has offered them a practical way of outlining the deeper organs, such as the heart and liver by palpation.

The fact that we can outline the heart and liver by gentle touch shows to us that our tactile sense reaches much deeper than we have previously believed. While *tactus eruditus* means a great deal and helps one to do this work better, yet I feel sure, after showing this method to many practitioners of medicine, both in Europe and America, and finding that it was readily appreciated by them, almost without exception, that it can be made a very valuable method for daily routine work.

The most delicate touch must be used for best results. Firm pressure blunts the tactile sense and interferes with our keenest perceptions. If those who try this method will bear in mind that it is accurately described by the name *light touch palpation,* and that light touch means a touch so delicate as to scarcely indent the skin, I am sure that success will follow the trial.

In attempting to palpate such deep organs as the liver, spleen and heart, certain precautions must be observed.

While it is possible to note the difference in resistance between tissues of slight and great density, even through the ribs, yet it is necessary to confine our palpation to either the intercostal spaces or the ribs and not pass from one to the other. If one crosses from the intercostal space to the rib, as one will do if care is not used when outlining the left border of the heart, especially where the ribs are well covered in an individual with considerable subcutaneous tissue, a resistance is at once noted when the rib is reached which may be easily mistaken for the heart border.

I have found the best method of procedure in endeavoring to outline the deeper organs by *light touch palpation* to be as follows:

1. Always palpate, wholly, either in the intercostal spaces or over the ribs. This can be applied to the liver and spleen as well as the heart because of the oblique direction of the ribs.

2. Begin palpating beyond the border of the

organ and approach it slowly. When the border is reached an increased resistance is at once noted, the degree varying in different chests.

3. The palpating fingers must not be moved too rapidly, or confusion will result. Sufficient time must be allowed to concentrate the mind on the sensation produced at each touch. Concentration is very important, especially when the change is slight, as would be noted in a heart or liver border covered over by emphysematous lung in a patient with thick chest walls.

Simplicity is not sufficient to warrant the use of a new method; it must be, at least, fairly accurate. I have controlled the accuracy of *slight touch palpation*, in the outlining of the heart, by the orthodiagraph, and am surprised at the result. Out of fifteen patients with normal chests, both borders were accurate nine times (60 per cent), the right was accurate twelve times (80 per cent), and the left twelve times (80 per cent). In no instance was the error over one-half centimeter and in most instances it was less than one centimeter. I am sure that this degree of accuracy is not exceeded by our usual methods of examination.

In examining the liver and the spleen, the precaution should be taken to have the patient hold his breath or breathe quietly.

Not only can *light touch palpation* be used in outlining normal organs, but it is of inestimable value in detecting certain pathological conditions.

Muscle rigidity, which has long been known to exist in diseases of the abdominal viscera, and which I have recently shown to be present also in diseases of the pleura and lungs, as mentioned above, can be detected very easily by *light touch palpation.*

The acute muscle spasms accompanying active inflammations in the chest and the pathologically changed muscles accompanying chronic inflammations can both be detected in this manner. From my experience with this method of examination I am also convinced that the physician can, by the use of this method, obtain valuable diagnostic hints in diseases affecting the abdominal viscera, as well as those of the chest.

Peritoneal and pleural effusions are quite easily detected by *light touch palpation,* and in cases of lobar pneumonia, which I have examined, the division between the affected and unaffected lobe could be determined without difficulty. It seems so plain that we can scarcely understand why this method has not been used before.

In order to obtain an accurate idea of what is to be detected by *light touch palpation,* I would suggest that the examiner touch very lightly with the pulp of his fingers, barely indenting the skin, over the fourth intercostal space to the left of the sternum and compare the resistance to the finger with that in the same intercostal space in the nipple line. This is comparing the heart in the area of absolute dullness with lung tissue. The difference is very apparent. Or, compare the resistance over the liver with that over lung tissue, or that over a pneumonia or pleural effusion with that over normal lung tissue. The difference is at once so apparent that it cannot fail to be detected. After the idea has been once grasped I believe a little patience and practice will soon give the examiner a fairly accurate means of determining the outlines of normal organs when they are situated against or near the body surface, providing they differ in density from those surrounding them, and of determining pathological conditions when they result in change of density in the organ or part of the organ affected.

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THE CANCER PROBLEM*

By ROSWELL PARK, M.D.

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I have always had a feeling of pride in being a member of this association, and that feeling is very much enhanced today in enjoying the privilege of participating in your work.

I regret very much that Dr. Coley is not here to consider the subject which was assigned to him, because what I shall say to you with reference to cancer will be said practically impromptu; but it is such a very important subject that I hope that what is said may provoke some discussion.

This problem of cancer is the most important one before the medical, as well as the surgical profession today. Cancer is certainly on the increase, not only as a disease of modern life, but from other and mysterious causes, and I believe the statistics collected from all over the world establish this fact. In New York State we lose about thirteen thousand people from tuberculosis every year. When I began to especially study this disease there were some fourteen thousand deaths each year from tuberculosis, and about five thousand deaths from cancer. From tuberculosis the mortality has now been reduced to about eleven or twelve thousand per year, while the mortality from cancer has risen to nearly eight thousand. This is not attributable to faulty methods of diagnosis alone.

Our studies have also established the fact that cancer is prevalent in certain localities and in certain houses. A few years ago we made a map of the city of Buffalo, the like of which has been attempted in only one or two other places in the world, in which all houses where the disease had occurred within ten years were marked, and we established the fact that there were certain places where cancer was far more prevalent than in others, and we noted a considerable number of houses in which several deaths from cancer had taken place.

With regard to the matter of heredity, I think it can be stated as a fact that the disease *itself* is not transmitted by inheritance, but I am quite sure that there is a possibility of transmission of predisposition. This is a very important question, not only for the laity but for physicians. For instance, a woman suffering from cancer will come to you and ask if her daughter is likely to have it. And again the daughter, whose mother has had cancer, will come to you and ask if she is likely to have it because her mother had it. Let us suppose the case of a mother who bears a daughter at the age of twenty-five. When the mother is fifty years old and has cancer of the breast is there any reason for the daughter to fear that she is likely to have that disease? I think perhaps there is, *but simply because of the liability of the transmission of a predisposition.* It is not possible to inherit disease which was not present when the individual was born.

With regard to the infectious nature of cancer, when I began to teach the doctrine in this country, some twenty years ago, I was smiled at everywhere, and found very few friends of that theory either here or abroad. Yet now

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the infectivity of cancer is quite generally established. Last year at the meeting of the International Society of Surgeons, held in Brussels, this question was under discussion for three days, and of some three hundred surgeons present out of a membership of six hundred, I found a large majority in attendance there believed in the infectivity of cancer, although there are naturally still some doubters. By that theory it is just as easy to explain all the phenomena of cancer as it is by any other. It is proven every day by clinical evidence. What stronger evidence can there be than the numerous instances of cancer following the use of the knife or trocar? Numerous instances have occurred in tapping for ascites due to intra-abdominal cancer, and it has been subsequently found that a track or streak of cancerous tissue follows the path of the trocar. What other inference can one draw except that of infectious character of the fluid which leaks out or oozes along the path of the instrument? That has been noted by numerous observers and many times in my own experience. It is known to follow the knife as well, and we have more and more frequently noted instances of rapid dissemination of cancer after the removal of a small piece of tissue for microscopical examination. I think it can be shown that this is a dangerous procedure unless the microscopical examination is completed within a few moments after the removal of the section and the operation made practically continuous with the examination. How else can you explain contact infection? And such contact infection can be seen in almost every case of intra-abdominal cancer, as well as intrathoracic cancer. How else can it be explained except as an autoinoculation? How else can you explain cases of malignant ovarian cysts, papillomata or dermoids, with infection of every bit of peritoneal surface which has come in contact with the disease, the infection leading to adhesions or to the development of papillomatous or carcinomatous outgrowths at thousands of points on the interior of the peritoneum? How else are you to explain the rapid dissemination of cancer after incomplete operations, as every one of you has seen? How else explain the phenomenon of metastasis? Is there any other disease, known to pathologists anywhere, characterized by metastasis as is cancer, in which you are not profoundly impressed by the very fact that metastasis furnishes the most indisputable feature of the infectiousness of the disease? The very fact that metastases occur during cancer is the best demonstration of its infectivity, and for me every instance of metastasis in a given case is an expression of a re-infection from the original source. If that does not mean that it is an infectious disease, what does it mean? You cannot explain it on any cell theory except the distribution of the *contagium vivum*, or whatever you would like to call it, from the original source and its being scattered all over the body. How else can you explain the horrible phenomena of malignancy, such as the general dissemination of medullary carcinomata or sarcomata as you may witness in serious cases?

What shall be said about the influence of trauma in connection with the theory of the infectivity of cancer? It may be that there is a predisposing cause; or it may be that it opens up pathways or ports of entry for infection just as it does in tuberculosis. I think whatever we may say with regard to the relation between trauma and tuberculous disease, we may say as to relations between trauma and carcinoma.

What about the results of inoculation? Well, they are extremely successful, particularly in certain animals, but we have found so far scarcely any exception to this fact that the transmission must be between animals of the same species. Here has been a great stumbling block for those men who do not wish to see the contagiousness of cancer. In our laboratory in Buffalo thousands and thousands of instances in small animals have been furnished, and recently in fish we are seeing these same evidences, and they have

been reinforced by many thousands of instances in the other laboratories of the world. The great trouble is that, cancer being transmissible only between animals of the same species, we are not at liberty to make experimentation in our own race. But that which we are not at liberty to do intentionally is done for us constantly in operations where knife or contact infection follows. It is done by accident. It is done by the ordinary process of disease. It is done many times unintentionally, and we see the same results. Nobody makes experiments deliberately, nor publishes his work showing that cancer can be transmitted from animals to man, nor from man to man, and here is where I make a plea for the scientific use of criminals for the purpose of legitimate investigation. (Applause.) There are a certain number of individuals who are worthless, who are useless, who are antagonistic to society, who have no proper purpose in this life, but who might be made useful under proper rulings of the courts. Under proper precaution if they could be made available for purposes of investigation, I feel confident that experiments on individuals of this class would be followed by startling revelations, and it is the only way by which I can see that some of these criminals can ever be made in the slightest degree useful to mankind.

The contagiousness of cancer is no longer uncertain. We have far more proof for its contagiousness than we have for that of leprosy, or some of the other diseases that are considered more or less contagious. But this is certainly true of leprosy. There is not one one-hundredth part the danger attending leprosy that there is cancer. But we are met with the statement that the infectious organism of cancer is not yet known. That is true. But neither is it in rabies, neither is it in scarlatina, nor many other diseases whose contagious or infectious nature we do not hesitate to accept. It is no argument to say that it is not yet identified. We know it by its results, although we do not yet recognize it face to face.

Now, the problem of attack upon cancer from the practical side, as it were, is, of course, of scarcely lesser importance than its pathology. But in order to make the attack effective we must make it at an early diagnosis. What shall be said about the early diagnosis of cancer? It is most difficult, undoubtedly in many instances, impossible. Under every means of investigation and exploration the diagnosis is sometimes impossible. Why is that true? Is it our fault? Here is a question the laity put to us very often; they say, "Why are you unable to recognize this disease?" The answer is found in this, and it is surprising that it has not been more generally recognized, for so far as I know, except in my own work, there is scarcely any allusion to it in English literature; yet it is a fact, namely, that *cancer as such has no distinct symptomatology.* That is not our fault. It is our misfortune that it has not a distinct symptomatology of its own. When you can *feel* it you may recognize it, but there is not one symptom produced by cancer either early or late which may not be produced by some other disease. Therein we find our excuse for failure to recognize it early, and therein we find our difficulty in coping with it. The more you think of this statement the more it will impress itself upon you, and the more anxious you will become to get nearer some early symptomatology. Possibly Dr. Crile has come as near to it as any one yet with his studies of hemolyses, yet these are not absolutely reliable nor available, because such work requires technic and skill of the highest order.

There are a few words I would like to say with regard to the possibility of cure of carcinoma or cancer in general. As yet the knife is the only remedy in the hands of the profession generally which offers any certainty, and not even that unless we get at these cases relatively very early.

Here is a general thesis which I think you will accept: *If* cancer could be early diag-

nosed or recognized, *if* it were accessible to our present means of attack, and *if* it were thoroughly removed, it could be cured; but there are *"ifs"* standing out in tremendous proportion and they are now apparently insuperable. We cannot often recognize it early; it is not always in an assailable position, nor is it possible to make a radical removal, which should be made in order to cure it; and yet when these conditions can be fulfilled then the disease is curable, but it will require that we get at the disease much earlier than we do at present. Delay in operating on these cases is partly the fault of the patient and partly the fault of the profession. It is a horrible reproach to our profession that some of its members make excuses for putting off operations on these cases when early operative interference would do much for many of them. Some members of our profession rather encourage delay for the purpose of an alleged study which is futile. They encourage delay at a time when action is most desirable. What we need to do is to practice it ourselves, and then preach by precept and example the earliest possible attack upon cancer. A well founded suspicion of internal cancer justifies the earliest possible exploration for its recognition, while such exploration should be followed by radical operation if it be possible to make it. It is a sad mistake to take a case of suspected cancer of the stomach and test it for weeks, and treat it for months, until all hope of doing good has passed. We should impress the desirability of an early exploratory operation, and no man should be trusted to do this unless he is both prepared and competent to go on with the work and make a radical removal at the same time if indicated or permissible. In other words, in every case in which there is a suspicion of cancer an exploration should be made at once, and no time should be lost or wasted in the use of drugs. I think it may be generally stated at an early date whether an operation should be done or not. That certainly is true of cases of uterine cancer, of cancer of the tongue, or the rectum and of many other organs, and I do not know but what this statement should be broad and general enough to cover every instance. If doubt arises as to what one ought to do it is practically too late to do anything, except to make a palliative operation. That may be worth while, but it is mighty late and it is usually too late to offer a prospect or promise of cure.

What can be done with non-operative measures, such as are held out by quacks and charlatans, and perhaps still by a few honest men? I do not know whether there really is much or anything in the so-called Alexander treatment, or in methods of that kind, but we read of selected and occasional instances in which apparently good has been done. I believe there is such a thing as the spontaneous retrocession of malignant growths. They cure themselves, but I do not think that this occurs once in several hundred cases. It is barely possible that in the administration of some non-operative remedy, spontaneous relief in a way may follow, but X-ray, for example, rarely cures in those cases where operation ought to be thought of first. Just as a practical hint in connection with the use of the cathode rays, I will say that their efficacy can be enhanced by the use of the thyroid extract. In other words, we get better effects by giving the thyroid extract internally while using the cathode rays than by the latter alone.

I know that what I have said without time for preparation has formed a desultory presentation of this most important subject, but I simply wanted to put before you a few thoughts in reference to cancer, and am very much obliged to you all for the marked attention with which you have listened to me.

GOITRE

By F. T. MERIWETHER, M.D.

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In operating upon surgical cases of the more rare kind, it becomes highly necessary that the mortality should be low and the results exceptionally good, especially in those conditions in which the mortality of the disease itself is low, for deformity and discomfort have no very great influence on the patients in considering an operation if there is a great risk of life.

But the only way to reduce and keep down the mortality rate of these infrequent operations is to urge upon the patient the safety of the operation, if it is a safe one, and thereby get not only the far-advanced cases, but also the milder and earlier ones, thus improving our judgment and skill and in that way still further reducing the death rate and increasing the number of cures.

Though goitre is not so rare even in this section of the country, still there are so few, and the physicians see them so seldom that it is very common not only for the laity, but also for the physicians to look upon it as something to be deplored, but still virtually incurable, certainly not as a surgical disease in any sense, and it is not uncommon for me to have a patient with a thyroid tumor which could be easily removed make the remark that their physician says such a tumor could not be removed, or if operated upon, that they would die, or become insane, or something awful would happen to them, or at least they would be in a worse condition than before, and hence absolutely refuse an operation.

The mortality of goitre operations in the early surgery of the thyroid gland was exceedingly high, as is usual in all new surgical fields, for only the very worse cases reach the surgeon, but increasing knowledge and experience on the part of the general practitioner and also on the part of the surgeon, and the referring of earlier and more promising cases soon makes for a lower rate. This has been shown in work upon the stomach, liver, gall bladder, spleen, appendix, etc.

C. H. Mayo's last year's statistics show a mortality of about 1 per cent of goitre cases, including the exopthalmic type. Kocher's mortality in simple goitre is only three in a thousand, surely an infinitesimally low death rate. Of course it takes nerve and skill to remove a thyroid gland, but once the technique is familiar, one should not fear the operation of itself.

The thyroid gland consists of two lobes, joined by an isthmus across the trachea and weighs normally about one and a half ounces, each lobe being approximately two inches long and three-quarters of an inch broad.

The blood supply is very profuse, being about one-sixth of that of the brain, the arteries supplying the gland being the superior thyroids, branches of the external carotid just above the bifurcation and the inferior thyroids from the thyroid axis, which arises from the subclavian. Occasionally a third artery, the thyroid aima, arises from the innominate and runs directly up the neck to the gland at the isthmus.

The veins are the superior and inferior, emptying into the internal jugulars, and the ima, emptying into the innominate vein direct.

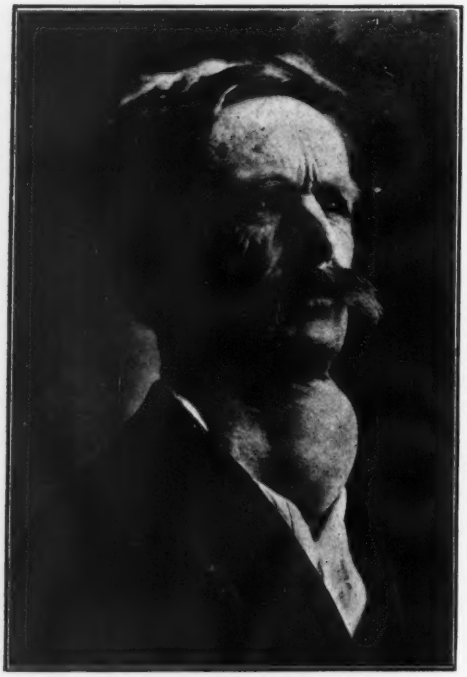
The nerve supply is from the superior and inferior laryngeal branches of the pneumogastric and from the superior ganglia of the sympathetic.

The parathyroids, usually two in number on each side, lie behind the thyroid, their function being practically unknown, though they have some antitoxic action and assist in the passage of the results of toxic metabolism through the kidneys. The removal of all para-

thyroids cause fatal tetany, though the two upper ones may be safely removed.

The function of the thyroid gland is not certainly known, though it has to do with the elaboration of the iodine of the human economy and is supposed to govern in some way the growth of the long bones.

Goitres are usually either diffuse or nodular, and may consist of only a hyperplasia of the gland elements, the parenchyma and stroma maintaining their normal proportions, or they may be vascular, in which the vessels are enormously enlarged. The other varieties are



Case 1 with Goitre.

colloid goitre, fibroid, true adenoma (which are rare), sarcomatous or carcinomatous.

The etiology and causation of a goitre lies usually in the drinking water.

The great source of iodine in the system is the water we drink, and it is in some way that the iodine combinations so act upon the thyroid as to produce irritation and hyperplasia of the gland elements.

Goitres are endemic in some parts of the world, notably in Switzerland and India; in fact, in some cantons of Switzerland every other person has a goitre.

The diagnosis I will not dwell upon, for it is usually easily made, and other tumors of the front of the neck are or should be easily differentiated.

A goitre which is fixed or not easily movable is very apt to be malignant, carcinoma, or sarcoma.

The treatment in a large number of cases is surgical, unless some contra indications are apparent, though many are benefited and even cured by internal and external treatment.

My experience with medical treatment is that the tumor almost always reappears after the cessation of the treatment.

Of course in the enlargement of the gland in young girls and in pregnant women, operation is not indicated, for these are simply enlargements, and temporary increase of the gland elements, and can be handled by the general practitioner. I will give the following as the indications for operations:

(1) If a goitre develops rather suddenly and grows rapidly, particularly if accompanied by emaciation and pain, suggesting malignancy.

(2) If pressure symptoms are marked, such as pain, obstruction in breathing, or deglutition.

(3) Those that produce heart symptoms, or nervous symptoms.

(4) Those that are growing downward in the thorax.

(5) Nodular goitres.

(6) Goitres that show signs of infection or tuberculosis.

(7) Goitres that are extremely sensitive to pressure or uncomfortable in a more or less marked degree from size, etc.

(8) And all goitres that have resisted local

or other treatment, if they continue to grow or produce symptoms.

OPERATION.

The operation of choice is excision and removal, though in many cases resection, enucleation, exenteration and ligation of one or more of the arteries may be indicated.

I will not enter into the operative technique except to say that the thing to avoid is hemorrhage, but if the surgeon knows his anatomy and is careful to ligate before cutting, or at least to clamp before cutting, the operation is a perfectly simple one.

The parathyroids must be left or else there will likely be tetany, which usually ends fatally.

The Beebe and Rogers' serum has not proven very successful and is still in the experimental stage.

ANESTHETIC.

Kocher now prefers novocain, or cocain, though sometimes uses chloroform, while Chas. Mayo uses ether by preference by the drop method. There is no doubt but what the occasional operator will want his patient to have general anesthesia, for it enables him to dissect more deliberately, and I have been informed by those who have used local anesthesia that the patients usually struggle a good deal and show every manifestation of pain.

In cases of exopthalmic goitre, where there is marked nervousness, and where death might and has occurred from shock, Crile, reporting three cases that died before he could commence the operation, has suggested what he calls "stealing the gland." He has the anesthetizer go into the room with a mask and some perfumed water, or liquid, and telling the patient it is a treatment for goitre, drops a few drops on the mask. Each day he increases the amount, adding gradually a little ether, until the patient is breathing pretty strong ether fumes.

Then, the day of the operation they give pure ether to anesthesia and operate, the patient knowing, of course, nothing of it until it is over.

In the case I am showing tonight, Dr. Elias gave nitrous oxid almost altogether, though I used a one-half per cent cocaine solution along the line of incision before beginning, and it worked perfectly.

Ordinarily after operation the temperature and pulse both rise, the former sometimes to 104 degrees, but in neither of the two cases reported tonight did we have any trouble of this kind.

EXOPTHALMIC GOITRE.

There are no doubt many nervous women, cases of so-called neurasthenias in men and women and even partial insanities in which a careful examination and study would show enlargement of the thyroid and the group symptoms of Graves or Basedow's disease. Cases of dementia precox are often due to disturbances of the thyroid secretions and

Case 1 with Goitre Removed.

resection or ligation would in many cases cure them.

Mayo refers to cases in which the gland was not palpable, but on operation was found to be several times the normal size, and in which partial thyroidectomy gave perfect results.

The symptoms of exopthalmic goitre: the extreme nervousness, nervous tremblings, profuse sweating, exopthalmus, though this is sometimes slight even in bad cases, inability to entirely close the eyelids, very rapid pulse, tchycardia, diarrhoea, etc., make a rather easy and positive diagnosis. In cases in which medical treatment has proven of no avail, operation is indicated. Jonnesco's removal of the cervical sympathetic has not proven successful, and has been given up. Thyroidectomy is indicated in the favorable cases, or ligation of one or more arteries in the bad ones.

After ligation, if the symptoms return, thyroidectomy will be much easier.

In the extreme cases, of course, local anesthesia is indicated, for these patients are bad for general anesthesia.

Case 1.—Patient of Dr. Engel, of Tryon, N. C. Mr. L., male, age 57, unmarried; mother, sister and niece have goitre.

First noticed swelling in the middle of neck fifteen years ago, had twice caused its apparent disappearance by using iodine locally, but it would come back. Has been growing steadily for the past five or six years. There hase been no pain, but dyspnoea, shortness of breath and difficulty in swallowing has become marked; slight deafness and ringing in ears. No emaciation and no family history of cancer.

Operation February 2, 1910. Dr. Elias administered nitrous oxid gas and a small quantity of ether near the end of the operation, probably 2 drachms. Injected one-half per cent solution of cocaine along the line of incision. The collar or transverse incision was made, curving upward along the sterno mastoid muscle at both ends. Skin flap dissected up, superior and inferior thyroids ligated doubly, and gland dissected out, leaving posterior capsules, and all four parathyroids—a small portion of gland left in the right side. Wound closed with silk-worm gut. Union perfect. No elevation of temperature or pulse at any time.

Case 2—Mrs. P., patient of Dr. Brownson's. Age 42, married, five children. Has had all the heart symptoms of exopthalmic goitre for several years, but growing worse. Very nervous, could not lie down, but would have to be propped up in bed. Unable to walk. Pulse from 110 to 160. Very short of breath, dyspnoea, emaciation, having lost thirty pounds; pulsating jugulars, enlargement of the thyroids, eyes protruding, making a very extreme case. I was afraid this patient would die from fright before we could operate, and of course did not dare give a general anesthetic.

Three hours before the operation I gave her ¼ grain of morphia hypodermically and another ¼ grain just before she went to the operating room.

Operation May 15, 1909. Used one-half per cent of cocaine subcutaneously along the line of incision and ligated both superior thyroid arteries.

For three days she was very nervous and homesick, in fact she required her family with her nearly all the time, and I was obliged to allow her to go home on the fourth day because of the extreme nostalgia.

Two months after the operation she had gained twenty pounds, pulse normal, and in eight months she had gained forty pounds.

She is now in perfect health and does her own work. The goitre is not palpable and the eyes are practically normal.

PULMONARY TUBERCULOSIS—ITS CARE AND TREATMENT

By DR. CHAS. A. ROBERTSON,

Nashville, Tenn.

Perhaps the most important preliminary essential in the successful treatment of pulmonary tuberculosis is the question of an early diagnosis. The patient just blushing into manhood, or womanhood, with a history of previous good health, begins to lose flesh, complains of general malaise, impaired appetite and digestion, with slight cough, and a progressive loss of color. This is a picture too often seen by the general practitioner, and, I am afraid, too often looked lightly upon and considered of little importance, until the patient is well nigh within the grasp of an incurable malady.

The slightest symptom, which is more or less constantly found in the symptom group of incipient phthisis, should be a sufficient clew for a thorough investigation and careful physical exploration.

The proper interpretation of physical signs may lead to a diagnosis of pulmonary tuberculosis long before there is sufficient cough and sputum for the detection of tubercle bacilli. I would call attention to the fallacy of making a diagnosis against pulmonary tuberculosis upon the negative finding in the microscopical examination of sputum, until at least a half dozen specimens have been submitted to the microscope by one thoroughly competent in this line of work, and not then, unless the negative microscopical findings are supported by the absence of physical signs in the chest. In other words, in my opinion the microscope and microscopist should be considered in the light of confirmatory aids only, in the diagnosis of pulmonary consumption. He, who must depend upon the presence of tubercle bacilli in the sputum for his diagnosis, will often make his diagnosis too late for treatment to be availing, and the golden opportunity will, too often, be lost.

The resort to some form of tuberculin reaction is to be recommended in those cases which will occasionally be met, where a differential diagnosis may be somewhat difficult.

Of these several varieties I prefer the percutaneous or systemic method, to all others for reliability and definite results; however, the method is open to the very serious objection that in tuberculous cases the patient may be made to feel very uncomfortable for a time. The method of Von Pirquet, I have used with such varying degrees of success, that I do not look upon it with favor. The opthalmo-tuberculin reaction of Calmette, I mention to condemn in the strongest possible manner.

With the early diagnosis made, it becomes our next duty to inform the patient of the exact nature of his trouble, and at the same time assure him that, while he is suffering from a serious and dangerous disease, with the exercise of the proper care, prudence and treatment, he may be cured; that while relapse may follow, and that his future life may necessarily be one of constant vigil, he may be cured to stay cured.

Pulmonary tuberculosis is justly regarded one of the most contagious of diseases, (and I use the word *contagious* in a broad sense, perhaps *infectious* would be the better word) and for that reason the principles of isolation, hygienic and sanitary care should be rigidly enforced. It is important that patients suffering from this malady should occupy separate apartments, of plain furnishings, free from carpets, curtains and draperies, and, as far as possible, all germ-concealing articles of furniture. Plenty of sunshine and fresh air should be admitted at all times without fear or stint. The patient's bed linens, towels and clothing should be put in a separate receptacle for the laundry.

All sputa and dejecta should be destroyed by burning.

CLIMATIC TREATMENT.

No doubt much good can be accomplished by a sojourn, more or less prolonged, in that particular section of the world which gives the maximum number of clear days, the minimum amount of moisture and the most equable temperature. There are many such places, both on this continent and that of Europe, and if the principles presently to be outlined shall be followed there, the patient's treatment will be ideal. But for obvious reasons a resort to climatic treatment for a patient in the ordinary walks of life, is not the best course to be advised. First of all, it is too expensive. Secondly, he is carried away from home among strangers, who have no interest in him beyond dollars and cents, suffering from a contagious and more or less loathsome disease, shunned by everybody. Thirdly, the patient soon finds discontent, and, like an animal at pasture, sees greener fields at a distance and moves from place to place in the vain hope of finding a more ideal and comfortable surrounding; he is in a constant strain, trying to make his environments fit his pocket, and soon returns home, tired and disgusted with his effort and exhausted of funds. After an experience with a number of cases in the middle walks of life, as may be seen, I am not much in favor of advising a change of climate, or telling our patients to "go West," and dismissing them to battle for themselves.

Fig. 1.

DRUG TREATMENT.

There is no drug specific for pulmonary tuberculosis, neither is there any form of medication which will, in any way, influence the pathology of tuberculosis, therefore we are restricted to the use of drugs in the temporary control of special conditions, such as the cough, sweats, fever, diarrhea, etc. In prescribing medicines to allay the harassing cough of phthisical patients, we often do more harm than good. The basis of most prescriptions is some form of opium, viz.: heroin,

codeine, or morphine, and while the guarded and circumscribed use of such drugs is permissible, yet they too often lull our patients into a false sense of security, which causes them to neglect the more important measures of curative treatment.

Creosote and its various compounds and combinations have been much vaunted for their favorable influence over tuberculosis. In my own experience they have fallen far short of such expectations, and I consider them all of doubtful utility. Cod liver oil is a food and tonic of value, and will be classed along with the drug tonics, such as iron and arsenic, which are invaluable as roborant measures in the treatment of adynamic and wasting diseases generally. There are many emulsions, elixirs, and fancy named preparations of cod liver oil. Some contain the pure oil, others purported to contain a tasteless alkaloidal principle, all concocted for the sole purpose of depleting the patient's pocket, which I mention only to condemn.

In the Journal of the American Medical Association of Nov. 28, 1908, will be found a most remarkable and interesting article from the pen of Dr. Barton Lisle Wright, U. S. N., who draws a close analogy of tuberculosis to syphilis, both in pathology and symptomatology, and speaks highly of the curative value of the succinimide of mercury. His report of cases is most startling, and I might say almost incredible, yet I am impressed favorably with the honesty and sincerity of that writer and I have no reason to doubt the correctness of his observation. I do not agree with all that Wright has said with reference to the analogy of tuberculosis and syphilis; indeed, much of his argument appears unsound. However, I have been sufficiently interested in his method of treatment to try it out in a small number of cases. These cases have been diagnosed

Fig. 2.

early, and were, for the most part, pulmonary cases, yet one case now under observation is that of Pott's disease. Of the number (eight in all), only one has completed the course, and I regard him as cured, at least, symptomatically so. One died of orbital cellulitis as a sequel to facial erysipelas. One passed out of my hands much improved. The remaining number are still under treatment and are progressing very satisfactorily indeed. The reader will bear in mind that the succinimide of mercury was not used to the exclusion of other treatment, such as tuberculin, tonics, rest and a life in the open air. It is, perhaps, difficult to estimate the good effects of the succinimide of mercury in these cases, yet I am convinced that my cases did better by having that treatment, and I was encouraged in its use.

The various sera which have been suggested from time to time have not proved their merit as yet, and the recent achievements of Wright and Douglas in the promulgation of the opsonic theory are not so satisfying and brilliant today as formerly.

OPEN AIR TREATMENT AT HOME.

The treatment of pulmonary tuberculosis by the open air method at home resolves itself into five points of interest:

1. Live constantly in the open air, day and night, throughout the year, and avail oneself of all the sunshine possible, with rest in bed during the presence of fever.

2. Forced hyper-nutrition by ingestion of suitable food, selected with the view of not overtaxing the digestive powers.

3. The use of tonics, such as iron, arsenic, strychnine, cod liver oil, etc.

4. The use of simple purgatives as often as required to get rid of the excesses of fecal matter resulting from overfeeding, and to promote a healthful circulation in the primae viae.

5. An enforcement of certain rules of isolation, sanitation and hygeine, which are calculated to overcome the danger of re-infection.

Fig. 3.

According to Bowditch (*Journal A. M. A.*, August 4, 1906), Dr. Bodington, of England, a half century ago was the first to suggest fresh air treatment in well regulated sanitoria. He paid the penalty, no doubt, for his

advanced thought, and died incarcerated in an insane asylum.

Herman Brehmer, not many years after Bodington, made his then supposed insane suggestion, proved the curability of phthisis in the mountains of Selisia by this method. He was ridiculed, but he lived to see the fruit of his work grow in his own country, as well as in others. To Trudeau justly belongs the credit of first proving the practical utility of this method, and the curability of phthisis in the Adirondack Mountains in this country. The success of this form of treatment in reducing the mortality of tuberculosis has been so marked that sanitoria for the open air treatment have been established in many sections of this country, as well as that of Europe. It is regrettable, however, that quackish methods, commercialism and political intrigue offer great obstacles to scientific progress and successful operation of many of these institutions.

I have no statistics at my command to prove the value of open air treatment in pulmonary tuberculosis, but Musser (*Journal A. M. A.*, December 29, 1906), in commenting upon Trudeau's work, states that "sixty-six per cent of the incipient cases continued well," while "twenty-eight and six-tenths per cent of the advanced cases are well," and "two and a half per cent of the far advanced cases remained cured." In my own experience I have had eleven cases who have more or less faithfully resorted to the treatment within the past ten years. Of this number, one is entirely cured, and has not had a symptom for a period of six years or more, and has given birth to two healthy children since her recovery. Another was a young business man, who made such rapid progress toward recovery that he returned to his business after about eighteen months of treatment, and was thought to be symptomatically well, and was so reported to the Nashville Academy of Medicine about two years ago. This case became converted to some fanatical and quackish methods and

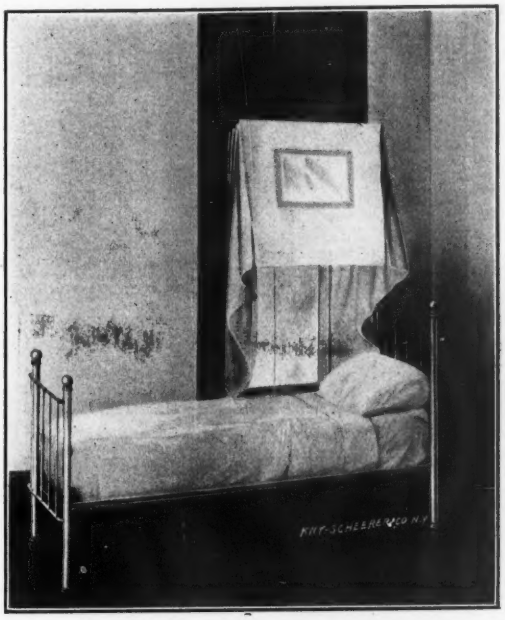


Fig. 5.

abandoned his treatment, going West, where he died about four months ago.

Another case was one of much interest, being a young lady about 23 years of age, who came under observation early with unmistakable signs of pulmonary involvement, otherwise in good condition. After six months' treatment with marked improvement in her lung condition, in fact, all signs of pulmonary disease had disappeared, she developed tuberculous peritonitis and gastro-enteritis, passed to the care of Drs. Witt and Douglas, who did a celiotomy in the vain hope of saving her life. (Note the marked benefit to her pulmonary disease.)

The next case was a widow, age 46, of Jackson, Tenn., who came under observation in December, 1905. Pulmonary tuberculosis very advanced. Patient was unaware of her serious condition, being told that she had "chronic grippe." She had extensive consolidation of lung tissue, was horribly emaciated, could scarcely walk across a room. Within three months she gained forty pounds in weight and her improvement was so marked that she thought herself quite well, and left her tent life to go back to her old environments. She embraced Christian (?) Science (?) and other fanatical notions, rapidly grew worse and died May 4, 1907.

The next case died of an intercurrent disease, orbital cellulitis, a sequel to facial erysipelas, at a time when he had every reason to hope for a permanent cure. Another case, that of a physician, has not been heard from for about two years. I suppose him dead. The last fatal case was that of a lady about 30 years of age, mother of two children. There was no improvement at any time in her condition. She persisted in keeping her children with her and caring for them. The youngest died of tuberculous meningitis, the other now has tubercular bone disease, and the mother died within a year from beginning treatment.

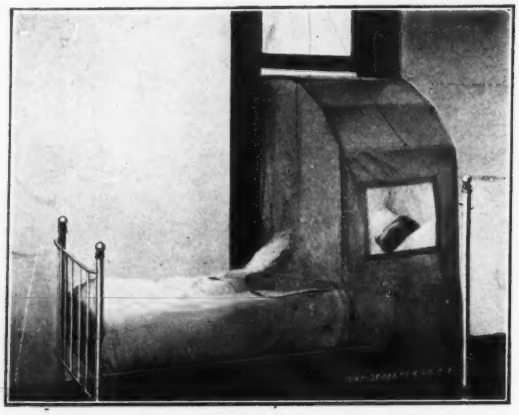


Fig. 4.

Of the remaining cases, one has passed out of my hands, the others are still under observation. One of these cases, a young man, an architect's draughtsman, is now symptomatically well. A case of Pott's disease is making a satisfactory progress toward recovery, and the other cases are doing well.

If no better results can be secured than two positive cures in eleven cases, I am sure we are amply rewarded for our effort.

It was Dettweiller, of Falkenstein, a student of Brehmer, who first advocated rest in connection with the open air treatment, and it is my custom to insist upon all patients remaining quiet when they are running a moderate fever, say 101 or over. The great ad-

vantage of this form of treatment over that necessitating a change of climate, is, that the necessary expense is practically within reach of all. Tent houses, such as is shown in the accompanying illustration, may be built for a very moderate sum, thirty to fifty dollars. In the case of nervous women and children, it is unwise to put them in tent houses separated from the home, and in these cases I have been in the habit of utilizing a back porch and building an improvised tent house there, such as is shown in Figs. 2 and 3. There are several ways in which we can arrange for sleeping

Fig. 3.

quarters in the open air in the home by utilizing a window. A window tent, similar to Figs. 4, 5 and 6, is a useful and satisfactory device, and costs about fifteen dollars. A tent portico, or an awning hood, can be put up by any tent maker for a moderate price. The tent house shown in Fig. 1 has served my purpose so well that I deem it of importance to give a brief description of it. It is a plain frame structure with wooden floor, wainscotted two and a half feet high. It is covered in by a shingle roof, which has a skylight upon either side, giving free advent to sunshine, and in order to protect the patient against the intense heat of the sun's rays, a white curtain on rollers is placed underneath. The remaining sides and ends are covered with canvas, making as many windows as possible, hung on hinges so that when lifted they serve the purpose of awnings. The windows are kept open all the time except during stormy weather. The size of this tent house is ten by fourteen feet, and cost my patient thirty-five dollars. It is often said that this climate is not suitable for the open air treatment of pulmonary tuberculosis, but when attention is called to the success which has been attained in New York State, Pennsylvania, Maryland and the cold Northwest, this argument falls to the ground. I venture a prediction that the day is not far distant when every State in this Union will have sanitoria for the treatment of tuberculosis, supported as a public charity, and that in every city it will be a more or less common sight to see a tent house in the lawn or a tent portico projecting from an upstairs window, where these unfortunate victims may be given the benefit of a curative effort at a moderate expense.

151 *Eighth Avenue, North.*

ERYSIPELAS.

By C. F. ANDERSON, M.D.

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Erysipelas is an acute inflammatory disease of the skin or mucous membrane, caused by the infection of a wound by one of the organisms of the streptococcic class.

BACTERIOLOGY.

It was taught for many years that erysipelas was a specific disease caused by the streptococcus erysipelatus of Fehleisen, which he discovered microscopically in 1881 and culturally in 1883. Many experiments, notably Petruschy's have proven that there is no streptococcus that produces erysipelas alone. Welsh, Fraenkel, Widal and many others have shown that the streptococcus of Fehleisen does not differ morphologically or in cultural characteristics from the streptococcus pyogenes. It is generally accepted that this disease is caused usually by an organism of the strep-

tococcus class, although rare cases have been reported as having been caused by the staphylococcus, typhoid bacillus and pneumococcus.

The occurrence of suppuration can therefore be explained without claiming a mixed infection.

MODE OF INFECTION.

Some pathologists claim that the streptococcus may invade the skin or mucous membrane in three ways, describing three forms, ectogenous, lymphogenous, and hematogenous; others at the present time think that there is always some atrium, probably the most accepted view. Some defect in the epithelium of the skin, such as wounds, fissures, rhagades, ulcers, pin scratches and even microscopic lesions however small may afford an atrium. The wound may be entirely healed before the disease develops. The so-called idiopathic cases, most frequently seen on the face, are not due to infection from within, but there must have been a break in the continuity of the epithelium somewhere.

The season of the year plays a very important part. More cases develop in the colder months, January, February and March claiming the greatest number.

More cases develop between 20 and 30 years of age as reported in a series of cases treated in the Philadelphia General Hospital during a period of five years. Debilitating diseases, such as nephritis, diabetes, chronic alcoholism, etc., are predisposing causes; it may develop in the new-born and is very fatal. One attack predisposes to another.

PATHOLOGY.

In mild cases the inflammation is generally confined to the skin, but may invade the underlying connective tissue.

An acute serous inflammation follows the infection of the atrium by streptococci, the blood vessels are dilated and a serous exudate is poured out; leucocytes migrate to this area. The superficial layer of the epidermis is raised and blebs are formed. This exudate invades the hair follicles and the hair drops out. There is a profuse small-celled infiltration of the skin and subcutaneous tissue; especially is this well marked around the lymphatic vessels which have become filled with streptococci, often to the extent of plugging. According to Tillman this small-cell infiltration in the cutis forms microscopic abscesses. The most active stage of this inflammatory process is found on the periphery of the patch, which contains more streptococci. In typical cases the local symptoms subside in a few days, the cell infiltration disappears and the serous exudate is absorbed. Of course in the phlegomnous cases the changes are more extensive and are followed by suppuration with loss of tissue. The systemic changes are not characteristic, and are those seen in most acute febrile infectious diseases. There is always a leucocytosis. Finally desquamation takes place without any apparent damage to the skin.

SYMPTOMS.

The period of incubation is very short, from twelve to sixty hours according to Fehleisen, or may last from three to seven days according to Butler. During this time there may be indefinite prodromal symptoms, such as headache, restlessness, anorexia, general malaise and slight pyrexia.

Generally the symptoms begin with a severe chill, which is followed by rapid rise of temperature to 104 degrees or 105 degrees F, often accompanied by vomiting and marked depression. About this time or soon thereafter at the site of the atrium there appears a redness and swelling; at first the redness appears as small red streaks following the line of the lymphatics, especially if it attacks the extremities. Later these red lines disappear and the redness gradually and irregularly spreads and may involve quite a large area. The neighboring lymph glands begin to swell and the symptoms of itching, burning, heat and pain in the affected area make their appearance.

The erysipelatous patch is characteristic in that it is sharply circumscribed, elevated, irregular in contour, and smooth, red and shiny in appearance. This swelling does not pit

on pressure. The inflammatory process spreads from the periphery, which abounds in streptococci. The irregular manner in which it advances resembles that of a piece of burning paper. There is always a sharp line of demarcation between the inflamed and sound skin. Where there is much loose connective tissue as in the eyelids and scrotum, the swelling is more marked. The serous exudate under the skin may form blebs that often coalesce forming bullae; these blebs or bullae contain a clear serum usually, but may contain pus. When this spreading inflammation begins on the face, which is far the most frequent type, it usually begins near the nose and rapidly spreads to the corresponding eyelid, which becomes much swollen, often entirely closed; it may pass over the forehead and invade the scalp. There seems to be a tendency for the spreading to stop when it comes to the beard line in men. In the facial type there is always danger of the infection penetrating deeply and causing severe constitutional symptoms and even a fatal menengitis. In severe cases the whole face may become swollen and distorted beyond possible recognition; it may also extend to the mucous membrane and cause a fatal oedema of the glottis and even pulmonary erysipelas has been reported. The inflammatory process may not be confined to any one part of the body, in fact it often spreads over almost the entire surface, as in one case I have recently seen beginning in the ear and extending practically over the entire head and trunk, causing severe constitutional symptoms and wild delirium. In these cases that are so widely spread the inflammation subsides in the beginning area, while it is spreading from the periphery; such a condition is called *erysipelas ambulans,* and may continue over a period of weeks.

As a rule, erysipelatous inflammation is not associated with suppuration; at times we have the formation of pustules on the surface, again the deeper structures suppurate, producing what is known as *phlegmonous erysipelas,* which does not differ essentially from ordinary phlegmonous inflammations nor does its management. The infection has been known to involve any and all of the deeper structures attacking fascia, tendon, muscle and even bone alike. The constitutional symptoms are usually in proportion to the local involvement, as they are caused by the absorption of the toxins. Streptococci are rarely found in the blood.

The temperature is probably not very characteristic, although the lack of the morning remission is thought by some to be pathognomonic. The fever continues high from five to eight days and then drops, by crisis usually. The temperature subsides before the local lesions have entirely cleared up.

The initial chill is fairly constant and may be severe and is often repeated.

The pulse runs *pari passu* with the temperature.

The tongue is thickly coated; loss of appetite, nausea and vomiting are frequently noted. Severe nervous symptoms may be present, such as headache, restlessness, delirium and coma. These are especially pronounced in the facial type. In severe phlegmonous cases all of the symptoms of general toxemia are present as high fever, dry tongue, delirium alternating with coma, involuntary evacuation of the bowels and bladder, etc. Many complications may arise during the course of the disease, meningitis, peritonitis, otitis media, nephritis, pneumonia, delirium tremens in alcoholics, septicemia and pyemia are the most common.

DIAGNOSIS.

The diagnosis in typical cases is unmistakable. In a well defined case, if you bear in mind the initial chill, rapid rise of temperature, together with the swelling, shiny, red, sharply defined but irregular local lesion that is painful, tender to touch, the great tendency to spread from the periphery and enlarged neighboring lymphatic nodes you will seldom fail in your diagnosis. Milan gives three signs that he claims are pathognomic.

Sign of centrifugal maximum. That is that the most marked lesions are always situated at a spot some distance from the starting point and on the periphery of the patch.

Second is the ear sign. Owing to the close adherence of the dermis and perichondrium and the absence of subcutaneous tissue in the ear, inflammatory processes stop at the periphery, but erysipelas, being a dermatitis, spreads in the skin, thus invading the ear as the skin in other parts.

Third is the pain sign. The erysipelatous patch is invariably more painful than other skin diseases.

PROGNOSIS.

As a rule, the prognosis is favorable, the danger lies in the complications. Anders' general mortality in 1,810 cases, in those under 40 years of age, was 6.57 per cent; in hospital cases it was 4.16 per cent; in private practice, 3.5 per cent. In alcoholics, those debilitated by diseases and the new-born as well as the very old, the prognosis is very unfavorable. Patients over 70 years of age give a mortality of 46 per cent; traumatic cases, 14.5.

TREATMENT.

The treatment may be considered under three heads: prophylactic, local and constitutional. Prophylaxis is of great importance both for the prevention of relapses or auto-infections, and to limit the spread of the disease. To prevent auto-infection the body linen should be changed often and the patient should be moved to another bed during convalescence if practicable.

To prevent the spread of the disease all patients should be isolated as soon as recognized, especially in hospital practice. This disease is highly infectious and is transmitted by any object or medium that will convey the bacteria from one individual to another.

There seems to be much difference of opinion as to whether this is an air-born disease. Flexner, Bevan, Brewer and many others think it is not. For a long time the erysipelas patients in the Philadelphia hospital were treated in the general septic wards and there were no reported cases of contagion. There are some cases reported to have been placed in the erysipelas wards that were afterwards found to be suffering from other skin affections, who did not develop erysipelas. I have seen one case treated in a ward with several surgical cases without transmitting the disease.

Local treatment. The local remedies are very numerous and are all based on the principles of antisepsis with the idea of relieving the local burning pain and preventing the further spread of the disease. Tucker reports the use of a saturated solution of magnesium sulphate in nineteen severe and complicated cases and thirty-five uncomplicated, with uniformly good results, all patients recovering in from two to seven days, the pain and local discomfort being relieved in a few hours. No other treatment was given. He places gauze wrung out of this solution over the inflammation and dampens it about every two hours or often enough to keep it saturated. Many have reported good results by this treatment. Another treatment that is much used and recommended is painting the affected area and about two inches beyond with 95 per cent carbolic acid and letting it remain until the parts become thoroughly blanched and white, then wash off the surface with 95 per cent alcohol and dress with gauze wet with alcohol. If the area is too large to paint at one time, make several sittings of it. Judd reports 82 cases with 5 failures, 10 delayed recoveries, 67 with complete remission of symptoms in from twelve hours to four days. His series represents all forms of the disease. The first effect is to relieve the pain and burning sensation. He has observed no untoward symptoms, although the urine became cloudy in a few cases. Ochsner uses this in circumscribed cases of the body. On the face he washes the infected area with alcohol every hour during the day, applying an ointment of 25 per cent ichthyol at night.

Ichthyol ointment 50 per cent in lanolin has been much used and has given good re-

sults. Kraske, Willy Meyer and many others advocate scarfication of the skin a little beyond the inflammation, then dressing it with warm bichloride solution.

Antistreptococcic serum has been used a great deal with varying results. In 1895 Marmorek reported a series of 306 cases in which the serum was used with a mortality of 1.63 percent. Ayer reports 15 cases treated with the serum, and he concludes from these compared with 79 cases treated without serum, that if treatment is begun early enough the course is considerably shortened, the extension inhibited and the general condition greatly improved. Many observers have reported good results from the serum treatment.

Constitutional treatment. Anders says, "Direct personal experience and theoretical considerations have led to the belief that correct vigorous feeding often renders the use of stimulants wholly unnecessary." When the heart becomes weak and irregular then stimulants are indicated. Whiskey and brandy are probably the best, the dose being regulated by the effect upon the circulatory system.

The use of strychnia has been serviceable in the hands of some. Should urgent symptoms arise it can be administered hypodermatically. Many other stimulants have been used.

Since we are dealing with a toxemia, it becomes necessary to induce elimination. The bowels should be moved gently but regularly with fractional doses of calomel, followed daily by the administration of salines.

The sweat glands may be stimulated by sponging the entire body with tepid water twice daily.

The late Dr. J. M. DaCosta recommended the use of pilocarpine to induce copious sweating with the view of aborting the disease.

Large quantities of water should be given at stated intervals.

Many attempts have been made with various kinds of specifics, but all of these have failed. The best results have been obtained by the use of iron and quinine. The tr. of chloride of iron was first recommended by Hamilton Bell in 1851 and has been extensively used since. Other preparations of iron are probably equally efficient, and while experience has proven the value of iron, it does not deserve the rank of a specific. The dose of the tincture of chloride of iron should be from 10 to 30 minims given every three hours. Many think the value of iron is much enhanced by the use of quinine with it. The daily dose of quinine should range from 15 to 30 grains.

139 *Eighth Avenue, North.*

URETERO-CYSTOSTOMY—AN IMPROVED TECHNIC—REPORT OF A CASE OF DOUBLE URETERAL IMPLANTATION INTO THE BLADDER

By J. W. LONG, M.D.,
Greensboro, N. C.

While doing an uretero-cystostomy recently on a patient whose ureters and bladder were both pathological I was impressed with the desirability of a better technic than that usually employed.

My attention having been thus forcibly drawn to the subject, I made a careful search through all the available literature seeking to learn the various methods that have been employed hitherto.

The question of ureteral surgery, per se, is a large one, much too large indeed to be considered in this connection; therefore, since this report is intended to apply purely to uretero-cystic surgery, the other phases of ureteral surgery will be referred to only incidentally.

It may be stated in a general way that in injuries to the ureter, even those near to the bladder, necessitating anastomosis that whenever the distal portion of the ureter is in a normal or fairly normal condition it is best when practicable to do so to anastomose the proximal end of the ureter into the distal portion, rather than to do an uretero-cystic implantation. But there are numerous instances in which it is not feasible to utilize the distal portion of the ureter; indeed, the distal end may be entirely destroyed, and then it becomes necessary to implant the ureter into the bladder, or into some other viscus. The implantation of the ureter into any portion of the ailmentary canal is considered hazardous, if not almost universally fatal, in every instance in which it is not possible to take with the ureter a portion of the bladder wall, in order to guard against early or late infection from the intestinal canal traveling upward through the ureter to the kidney. Anastomosis of the ureter to its fellow of the opposite side is rarely the best thing to do.

No good surgeon would at this day think of removing a normal or fairly normal kidney because of an injury to the ureter. Formally this course was advised.

The necessity for doing ureteral implantation arises from four classes of causes; first, congenital malformation, as, for instance, when the ureter opens into the vagina; second, injury to the ureter from disease as cervical carcinoma, or certain classes of stricture following an ureteritis, or by lodgment of a stone in the ureter; third, trauma to the ureter during operation, such as may occur during a vaginal hysterectomy; fourth, in resection of the bladder for malignant disease involving the ureteral portion.

There are three methods of approach in doing an ureteral implantation; first, per vaginam; second, extra-peritoneally; third, intra-peritoneally.

The method of doing the operation per vaginam has a well defined, though very limited field, of application, and is not to be considered in the vast majority of cases.

The extra-peritoneal operation is the ideal one and should be employed in all cases in which it is expedient to do so. There is less danger of contaminating the peritoneal cavity. Yet the sealing of the bladder cannot be so effectually done extra-peritoneally as when operating through that portion of the bladder covered with peritoneum.

The intra-peritoneal method is one which, through force of circumstances, must be adopted in many instances. Formerly it was much dreaded by surgeons, but improvement and confidence in one's technic emboldens the surgeon to select this method often as a matter of choice. Its exceeding low mortality in the hands of the skilled surgeon, the readiness with which the operation may be done and the freedom from morbidity gives one who is accustomed to doing abdominal work much assurance in undertaking the operation by this method.

The intra-abdominal method is the typical operation in which to apply the technic which is described in this paper, but it may also be used with the extra-peritoneal operation as well.

In doing the operation either intra or extra-peritoneally there are two or three points which must be carefully observed. In the first place in suturing the ureter into the bladder one must be exceedingly careful not to suture the bladder wall too tightly about the ureter so as to pinch the ureter, thereby causing a constriction either temporarily or permanently. At the same time it is equally as important to close the opening into the bladder sufficiently secure to prevent leaking from the bladder. It is also deemed important that the mouth of the ureter be split or cut tapering, in order to prevent contraction of the ureteral opening. Some operators have attempted to imitate nature by introducing the ureter obliquely through the tissues, making the openings through the various layers of the bladder at different planes, seeking thereby to form a kind

of obstruction to the backward flow of urine.

In doing the intra-abdominal operation it is imperative that the ureter be covered with peritoneum so that adhesions will not take place to the ureter, and what is still more essential, that the ureter may not be deprived of its rich lymph supply which comes in a large measure from the peritoneum and its underlying cellular tissues. For the same reasons, it is necessary that the ureter be implanted as near the base of the bladder as is possible.

The method which to my mind is simplest, and therefore the best, of doing an intra-abdominal uretero-cystostomy is as follows: Make an incision of convenient length into the posterior wall of the bladder near its base. It is just as easy to sew up an incision one or two inches long as it is to sew up a half inch incision, and, in fact, according to my experience, it is much easier. Besides it gives one an opportunity of stitching the end of the ureter to the mucosa of the bladder and thereby do away with traction sutures which some operators pass out through the urethra to be held with forceps or by a weight, either of which, to my mind, is crude and unsurgical. Therefore, I make an incision not unduly long, of course, but long enough so that I can work conveniently and quickly. The end of the ureter, cut tapering, is then introduced into the bladder a sufficient distance to be easily sutured by two fine cat gut sutures to the mucosa a little way from the incision. The incision is then closed, and the intra-peritoneal exposed portion of the ureter covered.

The difficulty that I have encountered in doing this operation is, in suturing the lower end of the incision, which is, of course, below the ureter. Recall that the incision should be made low in the posterior wall of the bladder, also that the ureter must be introduced into the incision and sutured to the mucosa before the incision is closed. Now it is no trouble to close the upper portion of the incision, that is, that part above the ureter, but it is difficult to get at the lower end and invert it as it should be. By the method which I propose this difficulty can be overcome very readily. It consists simply in *introducing and tying one Connell's suture from the inside of the bladder,* closing the lower end of the incision first, before the ureter is introduced. This inverts the peritoneal surface of the bladder, starts both borders of the incision to inverting, as it were, and simplifies the remainder of the operation to a surprising degree. With the Connell suture properly introduced and tied on the inside there need be no fear of leaking below the ureter. Following the introduction of this suture the ureter is placed and sutured as heretofore described. The upper portion of the incision is then closed with either the interrupted or continuous through and through suture tied on the inside and the entire line of incision gone over with a sero-serous linen suture.

The following is a report of the case from which the method described was the outcome:

Case—Carcinoma of Cervix-Uteri—Vaginal Hysterectomy—Injury to both Ureters—Nephrotomy—Double Uretero- Crystostomy—Recovery.

Mrs. F———, aged 38, Jewess, married, mother of four children, was referred by Dr. J. H. Boyles, Greensboro, N. C., 8-25-09. When admitted to St. Leo's Hospital the patient was emaciated, anaemic, and altogether in a very low state of health. On making an uterine examination the cervix was found to be the site of a carcinoma, having spread laterally on either side, involving the broad ligaments. The uterus was fixed. The opinion was expressed that it would be impracticable to do a hysterectomy, and that the best that could be done was to cut away as much of the cancerous tissue as possible and cauterize.

The operation that was actually done might be paraphrased by calling it "a piece of bungling surgery and the remedy therefor."

After the patient was anesthetized and the parts examined again carefully, the uterus was more movable, of course, and it was believed that one would be justified in attempting a hysterectomy. I think one of the factors that determined me to do the hysterectomy was the

knowledge of the four helpless little children at home. An effort was made to remove as much of the periuterine tissues as possible, hoping thereby to eradicate the disease. The operation itself presented no special difficulty, except the fact that the uterus could not be pulled down very far. Despite the exercise of the greatest care it is quite evident that both ureters were injured. My own impression is that the right ureter was caught in a ligature and the left one cut, probably with a needle.

Following the operation the patient had a rather stormy convalescence, she was restless, anxious, urine scanty and after four or five days had almost total suppression of urine for one or two days. In time there was marked sloughing at the uper end of the vagine, apparently the entire sutured ring sloughing away. It is among the possibilities that it was during this process that the left ureter was injured and its wall gave away.

However, the patient lived through the disease, the operation and the subsequent complications and slowly recovered sufficiently to be removed to her home six weeks after entering the hospital. On leaving the hospital most of the urine that passed was coming per vaginam, but a small amount came through the bladder.

After being at home for a week or two she began to complain of swelling and tenderness in the right lumbar region. On palpation the enlarged right kidney could be readily made out. At this time it was noted that there was no urine at all coming from the bladder, but that it all passed per vaginam.

The patient reentered the hospital on 22d day of October, 1909, and a right nephrotomy was done evacuating six ounces of turbid urine. This operation gave the patient great relief and she slowly made a very satisfactory improvement. At this time a suppurating lysoma, about the size of a small lemon, was noticed on the left side of the chest. This was incised and several ounces of pus evacuated. The patient's general condition was so poor and the vitality of her tissues at such a low state that this incised lipsoma healed very slowly. However, the patient's general condition improved very noticeably from day to day, the urine flowing through the lumbar incision, improving in quantity and quality, while the irritation about the vagina gradually grew less. The patient became less restless with marked improvement of her general morale.

Following the nephrotomy no urine appeared in the bladder until about December 8, 1909, when three ounces was drawn by catheter. From this time on the amount of urine passed through the bladder gradually increased, but was never equal to the amount of secretion of one normal kidney and contained much mucous and pus. Correspondingly the flow of urine through the lumbar incision decreased until December 29, when it had about ceased.

On December 30, 1909, an effort was made to close the vaginal fistula. Under ether anesthesia I attempted to turn the fistula into the bladder per vaginam. This is always a hazardous undertaking. I had succeeded in isolating the end of the ureter for perhaps three inches and had introduced a probe through the urethra and through a short incision in the bladder wall and into the ureter, and was in the act of suturing the end of the ureter into the bladder, when the urter gave way perhaps two inches from its end. This forbade any further attempt to anastomose the ureter per vaginam and forced me to adopt some other procedure.

The abdomen was opened at once and the left ureter stripped from its bed a sufficient distance and anastomosed into the posterior walls of the bladder. The uterus being out of the way made the operation easier than it would otherwise have been. After completing the anastomosis of the left ureter it was noticed that the right ureter could be seen very greatly enlarged as it coursed down over the brim of the pelvis on its way to the bladder. The peritoneal covering of the right ureter was incised and the finger pushed down along its course to near its termination in the bladder, at which point a very decided constriction

was felt; in fact, a little tugging on the ureter made it give way at this point. The right ureter was thickened and dilated to a very marked degree, but the consistency of its tissues was better than that of the left ureter. It was now anastomosed into the bladder as its mate had been.

A little accident occurred while doing this which jeopardized for a while part of the operation. It occurred in this way: A piece of gauze was placed around the ureter and a pair of Kelly forceps placed over the gauze with which to steady the ureter. After the anastomosis was completed and the forceps and gauze removed it was found that the forceps had compressed the ureter to such an extent that it felt as though the mucosa had been pinched in two, which was probably the case. However, the muscular coat was intact, and as there was nothing that could be done to remedy the evil at this time, the ureter was carefully covered with peritoneum and the abdomen closed without drainage. A small gauze drain was introduced through the vaginal opening into the bed of the left ureter.

Following this operation the patient did very much better than ofter her former operations. Through the catheter left in the bladder eight ounces of urine was recovered during the first twenty-four hours and it daily increased in amount. About the fourth day it was noticed that urine was coming from the vagina again, which proved to be the leaking vesico-vaginal fistula made in the attempt to turn the ureter into the bladder from below. This had been sutured at the time, but leaked a little bit for a few days only.

The lumbar incision discharged urine quite freely for a few days following the operation, but gradually the flow became less and less and finally closed without further interference.

I feel sure that the leakage from the lumbar region was due to the fact that the mucosa of the right ureter had been injured by the forceps, thereby producing temporary obstruction. Fortunately, all of the ureteral tissues have the property of reproducing themselves quickly and in this instance I have no doubt the mucosa was entirely replaced.

It may be stated here that some surgeons always make a lumbar puncture on doing an ureteral anastomosis to be sure that there will be no damning back of urine into the kidney.

On January 24, a cystoscopy showed both ureters entering the posterior wall of the bladder, one slightly above the other and to one side. Ureteral catheters were introduced and the urine flowed freely from each ureter.

So far there has been no return of the carcinoma, the woman has improved very much in strength, flesh and general appearance.

The incised, suppuroting lipoma has healed, as have the abdominal and vaginal incisions. For a month the patient has walked everywhere about the hospital, eats heartily and seems to have taken a new lease on life. She was discharged February 19, 1910.

HEMATOGENOUS KIDNEY INFECTIONS; BRIEFLY CONSIDERED IN SOME ASPECTS*

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It may be said at the outset that tuberculous infection has been excluded from present consideration; in this respect I have followed somewhat the usual classifications, whereby kidney tuberculosis—by reason, perhaps, of frequency, gravity, and minor differences—receives consideration as an entity apart from other kidney infections. Our knowledge, in-

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deed, as to the latter class of infections seems to be set forth so largely in scattered expressions and case reports, that a brief collection of certain views on the subject might be of interest.

First in order might come a comparison of the frequency with which hematogenous infections occur on the one hand, and on the other those of the ascending type. As to this, we can find no definite figures; in fact, it would be hard to work out a fair estimate. F. Tilden Brown once stated a belief, based on personal observation at hospital autopsies, that hematogenous suppurations were more frequent than those caused by ascending invasions. When we take into account the numerous cases whose symptoms are either masked or through their mildness, overlooked, it seems highly probable that blood-borne infections are far more frequent.

Next, as to the causes which predispose the kidney toward bacterial invasion. Accidental or external trauma may rupture the kidney, or may lacerate or even merely bruise the kidney tissue, and the "lowered resistance" ensuing may give bacteria a foothold. It is conceivable that operative manipulations in the kidney neighborhood might do likewise. Trauma from within, by stones small or large, in the calyces or in the pelvis, proves to be a frequent source of irritation and subsequent infection. Any obstruction to the free urinary outflow may produce changes favorable to invasion; thus, Chute relates a case (1) where in the course of ureteral catheterization the pelvis of a floating kidney was drained of two ounces of retained urine, containing elements which showed that a certain maceration of tissue was being produced by the retention, and that the condition was ripe for later infection. Again, Ransohoff notes the pressure on the ureter by the gravid uterus, (2) especially at about the fifth month; this may be more marked upon the right ureter on account of the usual inclination of the gravid uterus to the right; and this obstruction may suffice to cause changes such as before mentioned.

Kidney infarcts may likewise afford good soil for germ growth. When such infarcts are caused by infected ebmoli, as from malignant endocarditis, the bacterial factor is obviously at hand; but sterile emboli may cause infarction, and bacteria may appear in the scene later. Fat emboli, from fractures, etc., might reach the kidneys by way of the vena cava. Renal infarcts caused by emboli from syphilitic and atheromatous heart valves, are recorded by Babcock (3). Of a different nature were the infarcts in a pregnant woman found post-mortem and described by Klotz (4). In this case the process was so extensive that suppression of urine developed rapidly and caused death. Microscopic examination showed a thrombosis co-existent with the embolism, and that the two consisted of agglutinated masses of disintegrated red blood cells, similar to the condition sometimes found in the liver in pregnancy. Klotz is inclined to blame the cell disintegration to certain metabolic changes, and to infer that some infarction may occur not infrequently.

Before leaving the question of the more remotely predisposing causes, one or two pertinent facts might be brought forward. Councilman has produced abscesses in the kidney and heart-muscle of a rabbit, by injecting the staphylococcus aureus into an ear-vein. Brodel asserts that two-thirds of all kidneys are vascularized by two distinct vascular systems, the vessels of which separate at the kidney pelvis; and that the larger system supplies about three-fifths of the whole, this being usually the anterior portion. Exceptionally, this fact might have a bearing on the distribution of the lesions. It has also been demonstrated, according to White and Martin, that infective matter ascending the vena cava may reach the kidney and produce suppuration. Thus we have another and perhaps an important avenue of approach.

Bacteriology — The micro-organisms by which renal inflammation is started may be

considered in two classes; first, those which are the cause of—or merely incidental to—certain pathological conditions, but which are inconstant factors; second, those which usually produce definite systemic disease, whereof the kidney infection would rank as a complication.

In the first grouping are those responsible for suppurations secondary to constitpation, ulcerative enteritis, ischio-rectal abscess, tooth extraction, parotiditis, carbuncle, furunculosis, tonsillar abscess, and emboli. We might also place erysipelas and general sepsis under this head. Emboli, when septic, can as a rule be traced back to malignant endocarditis, and their bacterial nature determined in this way Babcock (5) summarizes the results of researches into the bacteriology of malignant endocarditis, giving the streptococcus pyogenes, staphylococcus pyogenes aureus and albus, and micrococcus lanceolatus, as the more frequent causative factors; less frequently, the gonococcus, bacillus typhosus, and the bacilli of diphtheria, influenza, and tuberculosis. Weichselbaum has isolated other organisms which are peculiar to malignant endocarditis.

In the second group we have on record kidney lesions—acutely inflammatory and suppurative—complicating measles, scarlatina, influenza, pneumonia, typhoid fever, gonorrhoeal septicemia, dysentery, and actinomycosis. To take up some of these more in detail, we may note as to measles the series of cases reported by Biehler (6). She found pyelitis or pyelo-nephritis in 9 of 147 cases, and in some of these the symptoms were not such as to give a manifest clue to the lesion. McCosh (7) reported a case of perinephric and cortical abscess, without urinary symptoms, following grippe and measles. Willard (8) reports a case of pyonephrosis, followed by brain abscess, in which the pus obtained at the operations gave cultures of the pneumococcus. Flexner (9) reported a case of typhoid septicemia with localized kidney abscess, from which the bacillus typhosus in pure culture was isolated. It is worthy of attention as to typhoid, however, that while investigations have shown the presence of bacilluria in 25 per cent of all cases, a cystitis is of rare occurrence unless super-induced through retention or other trauma; and Curschman (10) observes that he has never encountered a purulent pyelitis in the disease; though he notes the occasional occurrence of "miliary interstitial purulent abscesses, which . . . may coalesce into (larger) abscesses." As to dysentery, I have been unable to find definite case records where this trouble preceded renal suppuration. It is nevertheless well to bear in mind the quantity of septic matter which may enter the circulation through all enteric lesions, and the theoretical chance of bacteria or emboli reaching the kidney by the venous route from lower bowel ulceration.

Two other organisms require brief mention. The proteus vulgaris, often considered rather weakly pathogenic, has been shown by more recent study to be quite capable at times of causing severe inflammation. Different writers entertain various opinions as to the degree of trouble resulting from the bacillus coli communis. Thompson (11) reports cases where a diffuse inflammation ensued, with urinary findings indicating an active and acute parenchymatous nephritis. Keyes (12) states that these organisms may cause inflammation in the calyces, and later chronic interstitial sclerosis, without producing suppuration. Greene and Brooks (13) believe they may be excreted almost as a physiologic process, so to speak, and may vary in excretion according to the presence or absence of constipation. Rovsing likewise considers them to be innocuous, causing nothing more than a bacteriuria, as a rule. Guyon (2), however, believes they play an important role in kidney suppurations, and Huebner and Baginsky (2) have studied their occurrence in the intestinal disorders of children, with similar conclusions.

Pathology—This will evidently embrace a wide range of organic changes. First of all, might be put those hyperacute forms as given

by Albarran (12), where an accumulation of bacteria, with acute congestion quickly brings on urinary suppression and death. Next would come those cases of mere bacteriuria, with perhaps no demonstrable alteration of tissue; or as a more definite result, a grade of diffuse nephritis might be found, as before mentioned. Following this would come the chronic interstitial sclerosis Keyes mentions (12). Still among the lesser degrees of change, but with more immediate damage to function, would be the "radiating nephritis" of Albarran (12), where the bacteria accompanied by slight suppuration, follow the course of the uriniferous tubules. An amyloid degeneration may be one of the rarer terminations of such forms.

All of the above forms are more likely to be bilateral. Emboli may produce unilateral or bilateral lesions, single or multiple infarcts or focal abscesses.

When and from whatever cause small foci of suppuration appear, they may follow one of two courses. The abscess may become encapsulated and the contents inspissated, with no further impairment of function or health. This fortunate outcome is comparatively infrequent, and is determined chiefly by the pathogenic nature of the organisms. The foci more often being numerous and close together, it generally happens that they coalesce until larger and larger abscesses are formed; following this, rupture finally occurs, either into the pelvis of the kidney, as a severe pyelonephritis, or without the capsule, to produce a perinephric abscess. There may, of course, be some degree of pyelitis existing before the rupture of the focal abscess. Should an abscess of the parenchyma rupture into the renal pelvis, the pyelonephritis may continue as such, or, through inflammatory thickening of the ureter or other obstruction, it may become a pyonephrosis. This would complete the pathological course, perhaps after thorough destruction of the entire organ.

Symptoms—Since we have seen how varied can be the alterations produced in the organ, we can readily expect the symptomatology to be often very ill-defined.

Subjectively, of course, we have little but pain to give us a suggestion of trouble. A certain amount of pain is the rule; but the patient's pain-perception is often blunted by the systemic condition which is pre-existent. According to Lilienthal (7) the local pain may be greater early, before the tension of the pus-collections is relieved by tissue-destruction. The pain is usually felt in the loin, but may be referred anteriorly, to the costal margin. Manifestly, the progress of the suppuration cannot be interpreted through the amount of pain experienced.

Objectively, we look for the presence of tenderness. There is no great constancy in this guide, and largely for the same reasons as govern pain. In a case reported by Sharples the point of maximum tenderness was over the upper part of the right rectus, and this, with other misleading symptoms, led to a diagnosis of empyema of the gall-bladder. Next we would consider the temperature. Fever of a septic type is practically always present, but, unfortunately for the diagnosis, is attributable to the septic conditions known to be elsewhere. In measles with pyelonephritis, Biehler was led to suspect the latter when the fever was disproportionate to the general infection. Chills may accompany the fever, to emphasize the septic process. The blood will show a high leucocyte count, but will be of little assistance in localizing the trouble. Vomiting and hiccoughs may occur, especially in those cases where uremic symptoms threaten or supervene; and typical uremia with convulsions has occasionally altered the picture.

Where the urine shows changes, the cystoscope, assisted by ureteral catheterization, will be of the greatest aid in confirming the affection of the upper urinary tract, and in deciding whether one or both organs are diseased. Changes in the urine are far from constant. In some cases, especially of cortical abscesses, the urine remains normal. The diagnosis in

such cases can be made at operation or autopsy; ofttimes no sooner. In many cases the urine may contain bacteria, albumen, blood, casts, or pus. When it contains albumen and pus, with the albumen in excess of the amount accounted for by the pus, and with no casts to suggest the presence of more benign nephritis, we may at least suspect an abscess of the parenchyma. Pus-casts are still more suggestive. The amount of pus in the urine may vary greatly; and in some few cases we may observe a sudden great increase in pus, with an amelioration of other symptoms, indicative of the rupture of an abscess into the kidney pelvis. Urine containing pus which is renal in origin also differs in certain macroscopic appearances from urine containing pus formed in the lower tract; but even when so differentiated it may show nothing more than a pyelitis, and localized abscesses must be inferred from other findings. After all, in considering multiple abscesses, and to quote from Lilienthal (7): "The foci will in time coalesce, forming larger and fewer abscesses, with great destruction of tissue—a state of affairs far easier to diagnose, but correspondingly ominous for the patient." And yet such a view of the diagnostic situation should urge us to correlate all symptoms most carefully, and should encourage exploration in doubtful cases.

Treatment—This can be handled with a brevity which is no especial credit so far as the prognosis is concerned. Provided a diagnosis of renal suppuration is made, the kidneys should be explored. The exceptions would be in cases where all symptoms are very mild, or in cases where the most severe involvement of both kidneys is evident. In the very mild cases, urinary antiseptics of the hexamethylene-tetramin type may be administered, but with caution; hematuria often develops when a crippled kidney is further burdened with such drugs. Lavage of the renal pelvis per catheter might also be considered in selected cases of the mild type; but this could only be of benefit where the lesion was confined solely to the kidney pelvis. For obvious reasons, lavage must have a much more limited field than certain enthusiasts would lead us to believe. In the very severe cases, surgical attempts will prove futile, and moreover will only hasten the doom.

In cases other than the above, and where exploration seems indicated, an additional problem is often presented after the diseased kidney is reached. This is the question of choosing between mere nephrotomy or nephrostomy, and nephrectomy. In the last analysis this must be left to the judgment of the surgeon, guided as he is by the condition found. The mortality which in the past has so often attended a secondary nephrectomy after an unsuccessful nephrotomy, has inclined many operators to remove the kidney when this can be done with fair prospect of safety.

SUMMARY.

Some conclusions that might with propriety be drawn from the above seem to be as follows:

1. Nearly all micro-organisms which gain entrance to the general circulation may produce severe changes in the structure of the kidney.

2. These changes are more evident if acute, but many chronic changes not now ascribed to infections may be produced in this way.

3. Many cases of oliguria, anuria, uremia, and death, which are but little understood at the present time when occurring in pregnancy or in the course of acute infections, may be due to an interference with renal function, borne thither by the blood.

4. It is in such cases that the usual line of treatment tending to promote diuresis and stimulation of cell action, must perforce fail to be effective.

5. Kidney suppurations are ordinarily masked by processes which precede and overshadow them; hence they must be always suspected in order to be found with fair frequency.

6. The urine as a guide is too often misleading and untrustworthy.

7. Exploration from below, by ureteral catheterization, or from without by incision, is justified in cases of doubt, through the grave prognosis belonging to untreated cases

8. Unaided recovery is rare in extensive lesions, and operative interference should be radical when attempted.

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SELECTED ARTICLES.

CONCUSSION OF THE BRAIN

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(Translated for the Southern Medical Journal by W. A. Bryan, M.D., Nashville, Tenn.)

Concussion of the brain, contusion of the brain and compression of the brain, these are, as is known, the three several pathological conditions called forth by the action of blunt force applied to the skull. In many cases they coexist, so that one clinical picture may obscure the other, whether transient or lasting, and a differentiation of symptoms belonging to one of the affections or another becomes difficult or impossible.

If one wishes to understand these three brain condition, then one must, as much as possible, devote one's attention to uncomplicated cases belonging to one division or another. Such uncomplicated cases of concussion, as well as of compression, are not infrequently seen; on the other hand, contusion of the brain is frequently complicated by concussion, sometimes also by compression.

We shall narrate next such a case of uncomplicated concussion.

A laborer falls from a building and strikes his skull against the ground and lies as if dead, pale and without motion; first by close observation we note that he still breathes—slowly and superficially—and that his pulse is beating; he responds to loud calling, to pinching the skin, or to touching the conjunctiva; his pupils are wide open and unresponsive, or scarcely react to light. After a time, about a quarter of an hour, a half hour, or even longer, he begins to rouse himself, groans and sighs, reacts to pinching by moving the extremities, draws up and extends his legs spontaneously, and turns from one side to the other. Repeated vomiting occurs. Some hours later he answers questions, but at first tardily and reluctantly, and only in response to loud calls. He can give his name and address, but does not know where he is or what has happened to him. Left alone he immediately goes to sleep again, and if disturbed by calls or by being shaken, he gives plain evidence of his unwillingness, either by threatening mien or gestures, or in the words, "Leave me alone," or by loud exclamations or abuse. After a few hours the sopor is reduced further, one can converse with him somewhat better, but he uses few words, although more rationally, and complains of pain in his head and dizziness, especially when attempts are made to raise him up; photophobia is marked. Ask him about the accident, and he tells you he has no recollection of it, and that the last hours before the accident are a blank to him; he has the so-called retrograde amnesia. The stupor now disappears completely by degrees. Dizziness, headache and photophobia continue for some days, and soon the injured person is completely restored.

Although we were to consider only concussion of the brain here today,* it will not be superfluous to give a case of compression in contrast with the above case of simple concussion.

A young man while playing is struck on the left side of the cranium by a marble; he staggers, is dizzy, but not unconscious; after sitting down and resting, he goes to the trolley and rides home. The manifestations of the slight concussion are gone. However, he soon finds himself worse again, becomes nauseated and vomits, complains of severe headache, great fatigue, and weakness in the right arm and leg; then he loses consciousness and responds no longer to external stimuli. His

breathing is irregular and stertorous; the pulse is very slow. He is brought into the clinic in deep coma. The greater part of the left side of the cranium is turned out in an osteo-plastic flap. Between the skull and the dura a large coagulum of blood is found, which manifestly comes from the torn middle menigeal artery. The dura is depressed by the clot and the course of the case warrants a diagnosis of the condition as found. The clot is removed and the bleeding points in the artery ligated. The rupture of the vessel corresponds to a fine crucial fissure in the parietal bone.

During operation, immediately after turning back the flap, the frequency of the pulse increases and the patient moves the previously paralyzed right leg. Consciousness returns in the course of the next hour. On the next day the patient feels almost completely restored.

As in a case of concussion so in this one, the real symptom is unconsciousness, but in the former the unconsciousness in its full intensity followed the injury immediately, while in the latter it developed gradually in consequence of narrowing the space within the cranium by the escaping blood. In the former, unilateral paralysis was wanting; we see in the latter a right-sided paralysis; while in the former the unconsciousness disappears without intervention, in the latter it is necessary to trephine and remove the pressure to save the patient. Without this interference the condition would have grown worse, the formerly slow pulse would have become rapid, severe epileptic spasms would soon have come in rapid succession and the patient would have died shortly.

If we have to do not with hemorrhage from the meningeal, but with a depressed fracture of the skull with direct pressure of the bone fragments on the brain, under these circumstances loss of consciousness may be immediate, and we cannot tell whether it is due to the compression or the associate concussion.

In contusion, clonic twitchings and tonic contractures of the extremities frequently appear, noticeable from the beginning in severe brain injuries; in the slightest cases the symptoms of contusion are less in evidence than those of concussion and first manifest themselves after disappearance of the deep coma. When the patient begins again to respond to stimuli and move, one observes that one extremity or another lingers and at the same time tension is constantly more marked in the muscles of such extremity than in the corresponding muscles of the opposite side. Relaxation of the extremities is noted more frequently in compression than in concussion, which is frequently associated with compression due to hemorrhage from torn cerebral vessels. If one lifts an arm or a leg and drops it, it falls like the extremity of a cadaver, but those on the other side fall less heavily, because the natural tone of the muscles partially supports the weight. The local brain injury may manifest itself by paresis of one facial nerve or another, as shown by flapping of the cheek during expirations, or it is shown by unilateral crippling of the eye muscles. Lumbar puncture gave us, when we employed it, bloody cerebro-spinal fluid.

As soon as evidence of unilateral contractures or of relaxation is found, we are sure that we are no longer dealing with concussion, and the further progress of the case corresponds with the diagnosis of contusion. If the loss of consciousness gradually disappears and the patient recovers, there usually remain certain sequellae; in most cases unconsciousness only partially disappears, and after a few hours becomes more intense and the patient dies in coma. These rapidly fatal cases are indicated further by rapid rise of temperature to 40 or 41 degrees C. and even higher.

It must be admitted that concussion may result in death very quickly in cases where there are no localized changes, and in which autopsy shows no contusion, the only discoverable lesion being small capillary hemorrhages, which are seen on the cut surfaces as blood clots no larger than a pin's head. These have already been described by Robert Bright, and are often incorrectly given as characteristic

of concussion of the brain. The patient who has concussion, if he does not die shortly, lives and gets well; there is no opportunity to investigate his brain, hence it cannot be directly proved that capillary hemorrhage is present, but the circumstance that unconsciousness and other symptoms disappear much sooner than the small coagula are absorbed, renders the presence of such capillary hemorrhage in commotio cerebri very improbable. When they are come to autopsy, laceration of tissue and rupture of vessels in the brain are found, but if we will not pervert the clinical notion then we must accept such as contusion and not as concussion; just so in common parlance a house is "concussed" (erschuettert) by a thunderstroke or an earthquake, or by a passing train; it remains unharmed. On the other hand, contusion (Quetschung) of an extremity always shows bleeding (open or concealed) and, with this, tissue destruction.

If we now turn our attention to concussion alone, its characteristic clinical symptom is loss of consciousness, which is manifested in full intensity instantly upon receipt of injury, and then subsides gradually. Only in the light cases do the patients not lose consciousness at all; in these it becomes "dark before the eyes" for only a few minutes, the patient is dizzy and reels, sits down, and after a brief rest is able to go on his way. From this lightest type of concussion and the numerous cases having unconsciousness from ten to twenty minutes there are all gradations up to a duration of fourteen days or more of unconsciousness.

Schmucker relates the case of one of Frederick the Great's soldiers, a tuft of whose hair was cut away by a glancing cannon ball, and who remained unconscious six weeks. A case of unconsciousness lasting nearly six weeks was observed by Pirogoff.

In the deep unconsciousness the patient resembles one narcotized with chloroform or ether or one who is dead drunk. If one is called to see a head injury and finds his assistants already busy investigating the bleeding wound or cutting it open, without hearing cries from the patient and with no movement, the first question is, "Is the man chloroformed or not?"

Also the behavior of the pupils and the vomiting during recovery from the sopor of concussion are very like those of narcosis. A real difference is found in the fact that unconsciousness comes suddenly in concussion, gradually in anesthesia.

Relative to the method of waking from unconsciousness, concussion of the brain reminds one very much of acute alcoholic poisoning. A very drunk man shows during his gradual return to consciousness the same desire to be left alone and to sleep profoundly through his drunkenness. He responds to shaking and to calls in the same manner, with movements intended to thrust off his disturbers, and with not very complimentary expressions of dissatisfaction with his surroundings. Retrograde amnesia finds its analogue not in chloroform, ether and alcohol narcosis, but in carbonic oxide poisoning.

We may therefore consider concussion of the brain as a narcosis produced by a single application of force to the skull. In the definition it is stated that concussion is a functional diffuse brain disturbance, which disappears of its own accord, and in this indeed lies the characteristic significance of concussion as contrasted with contusion with its circumscribed lacerations and localized functional disturbances, which if at all, at most only partially are restored to normal.

Whether death may result from simple concussion, as it does from deep narcosis, I submit as an open question. Such cases are reported, which died immediately following injury, and in which autopsy reveals no macrocopically visible changes in the brain.

Littre reports the case of a prisoner, who committed suicide by butting his head against the wall; nothing special was found on autopsy except a strikingly shrunken brain.

In cases of immediate death from severe

brain lesions, therefore, contusion of the brain is chiefly concerned.

As to pulse and temperature it is often stated that the pulse is always slowed and the temperature reduced.

This is generally incorrectly expressed. Immediately, or a short while after the injury, one rarely has opportunity to take the temperature. About an hour after injury we found the temperature 36° C. or 36° and some tenths, at several observations. The drop of temperature, if at all constant, is very soon replaced by a rise. If one reviews the charts of temperature and pulse in a large number of head injuries, in which observations are made mornings and evenings, and selects only the plain cases of simple concussion, then one finds the observation, usually made some hours after the accident, to be generally just a slight rise of temperature to 37.6° C. or 38° C., and on the following day a still higher rise to 38.4° C. Then the temperature returns to normal, rarely below normal, as far as 36° C. or lower.

Just as little is the pulse at the first observation too slow, but much oftener accelerated to 80 or 90, sometimes as high as 120. Concerning the pulse rate immediately after injury we have no observations at command, hence I cannot say whether at the very first it is always too slow.

Polis saw a case of concussion four or five minutes after injury; his pulse was 48 and irregular, and his respiration four or five per minute.

During the subsequent days the pulse rate remains the same, or comes down, sometimes to below normal, 50 to 44. I have not been able to prove any definite relationship between the temperature and the pulse rate. The pulse is usually irregular at first and remains so for several days, but this is not always the case. Sometimes, especially in lighter cases of concussion of the brain, after some hours have elapsed since injury, and later, the pulse and temperature show nothing abnormal. I have already mentioned that the pupils are usually midway dilated or, in severe cases, dilated to their maximum capacity, and that they react either poorly or not at all. Not infrequently one can observe a transient inequality of the pupils. Several lumbar punctures have given us clear fluid, none have shown blood.

A very interesting symptom of commotio cerebri is retrograde amnesia; it is wanting only sometimes in the very light cases. If the patient has recovered sufficiently to be conscious and to give clear answers to questions, it becomes manifest that he has not only lost recollection of the accident, but also of the time immediately preceding it. The laborer (reported above), who fell from the building in the afternoon can remember neither the work which he was last doing nor the noonday rest. Just as little does he recall his mounting the scaffold in the early morning; he only recalls how he breakfasted in the early morning and how he went to his work. Every one who has fallen from a street car does not know where he took the car, he cannot say where he was going or whether he was seated inside or standing on the platform. If you question the patient next morning again, you will observe that he plainly remembers incidents closer to the accident than on the day before; the laborer recalls now the noonday rest and a conversation during the same, and the man thrown from the electric car can say where he was going and that he was seated in the car on the right side. Soon the recollection embraces events completely up to the accident, but the accident itself usually remains blank.

In general the extent and duration of the retrograde amnesia sustains a definite relationship to the duration of unconsciousness. In cases where unconsciousness lasts only a few minutes, the last moments prior to accident are recalled; often, too, the accident itself is even recalled immediately or on the next day. In cases where unconsciousness lasts all day amnesia not infrequently extends backward over several days or weeks and may persist for weeks or months, recollection of the acci-

dent being permanently lost. If patients later think they are able to give details of the accident, they are often unable to differentiate between their own recollection and the statements made to them meantime by relatives.

Observations of accidents are of especial worth when they have occurred in the presence of the observer, so that the duration of unconsciousness may be established.

Gussenbauer ascended the Eiger with a friend. The friend fell and lay three to five minutes unconscious. On coming to his senses he could recall nothing of the mountain tour. Nasse, von Bergmann's assistant, was on his morning round in a ward during which he was hurled against an iron post by explosion of gas and received a fracture of the skull. Although he regained consciousness in a quarter of an hour, he did not remember the work which he had done in his room an hour before, or that he got out of bed, dressed and breakfasted. Von Bergmann does not say how long the amnesia lasted.

In every case an unconsciousness, therefore, of from five to fifteen minutes' duration serves to bring about the appearance of a retrograde amnesia. Particularly in a forensic way these cases, though by no means frequent, are of interest, in which the defects of memory are filled in by hullucinatory evidence. The injured person asserts that he was crossing the street or that he has received a blow on his head and cannot be convinced, until some days have expired, that his memory has deceived him.

Besides retrograde amnesia, considerable injury to the power of observation is found during the first days subsequent to recovery of consciousness. Impressions do not remain fixed in the mind, so that after complete recovery the recollection of the time subsequent to regaining consciousness is wanting or very incomplete. On seeing the patients months afterward, they are unable to tell what transpired in their presence in the hospital, and by which of their relatives they were visited, although they have conversed with them at the time of such visits. Sometimes they can tell exactly from what day their recollection became normal.

Next in relationship comes the cases of traumatic stupefaction.

A coachman fell from his box to the ground and was unconscious for five or ten minutes. Then he came to himself, climbed into his box and drove the right way home; afterward he remembered nothing of it at all (his own observation). Boullard (Kalberlah's reports) reports the case of a midwife who, on her way to a woman in confinement, struck her head against something and was unconscious a quarter of an hour, then went and looked after the delivery, which lasted two hours, and delivered the afterbirth, but afterwards knew nothing of it at all. A friend of Stromeyer's was stupefied for half an hour after falling from a horse, remounted his horse, made a journey of three hours in less than one hour, and first recovered full consciousness when he reached home and found, to his astonishment, that his horse was bathed in sweat (somnambular condition according to Stromeyer).

Kalberlah has described an especially severe case of disturbance of memory.

A mason fell from an elevation five meters high, was at first entirely unconscious, first recognized his relatives on the thirteenth day, began to talk on the sixteenth day, but still was completely disorientated. Reminded of the wounds on his head, he asserted that a wall fell on his head, which was not the case, or that acid had trickled on his head. Six weeks after the accident it was established that his retrograde amnesia covered a period of a year and a half, while his memory for previous dates was good. Concerning the last year and a half he made false statements about his place of work, his employer, etc., and indulged in strikingly imaginative statements on these subjects. Three weeks later he began to make one concession after another relative to the time prior to the accident. His imaginative statements subsided and fourteen weeks after the accident his memory was clear on all

incidents till shortly before his injury. A later observation showed that the patient was still not mentally normal; he possessed an inclination to boast and tattle, was irritable and jealous, drank much schnapps, and then became very much wrought up.

An amnesia lasting so long and reaching backward over so long a period must be one of the greatest rareties. There is almost a suspicion that there is more than simple concussion present, and the fact that a paresis of the left arm resulted from the injury, bespeaks the same conclusion. I should like especially to observe that traumatic psychoses, at least such as come on immediately, are in my experience more often due to contusion of the brain associated with concussion than to simple concussion. Kalberlah classes his case as belonging to the category of Korsakaw's disease.

We observe transient irritative psychic conditions in the first days subsequent to awaking from sopor in cases which must, according to the remainder of their course, be classed as uncomplicated concussion. If the irritation and the motor unrest increase very much, if hallucinations, ideas of persecution and delirium come up, confusion may arise in differentiating from alcoholic delirium, but I have seen such irritative conditions appear in very young individuals, who surely could not have been alcoholics. A young man, who after recovery behaved himself with uniformly good manners and good sense, raged and insolently misbehaved for two days and spat in the face of every one who desired to speak to him. As a screen had been placed about his bed, he spat away over the screen in curves that were both skillful and effective.

It is known that occasionally sugar in the urine and polyuria follow concussion of the brain, with a preference for severe cases with prolonged unconsciousness, transient psychoses and evidence of contusion of the brain; sugar and polyuria also occur, however, in the lighter cases. If the urine of every case is not examined this alteration may readily escape observation. Polyuria without sugar occurs more often than excretion of sugar does. We saw polyuria very transient, and after a short unconsciousness, in a man 26 years old; in the severe form, polyuria was not observed until weeks after the accident; it lasted as long as they remained under our observation. There were three such cases.

A laborer, 19 years old, was struck on the head by an iron rail falling six meters; he received a depressed fracture of the external table, there were no symptoms of compression. He suffered from delirium and ideas of persecution. Five weeks after the accident he manifested polyuria, with no sugar, passing from nine to ten liters in twenty-four hours. Nine weeks after receipt of injury the quantity was still seven to nine liters. A man, 41 years of age, fell from a window and received a complicated fracture of the right half of the frontal bone with contusion of the brain and evidence of concussion; the quantity of urine rose to 5800 cc., and the polyuria remains to the present time, ten months after the accident. A workman's apprentice, 15 years old, fell from an elevation of from three to four meters, was unconscious one day and showed a transient paresis of his left side. The quantity of urine passed daily amounted to 7800 cc. According to his report, the polyuria continued for six months and then gradually disappeared.

It is unnecessary to call attention to the fact that such a traumatic diabetes must result from injury to the wall of the fourth ventricle.

If we compare concussion of the brain with inhalation narcosis, the comparison shows an absence of retrograde amnesia for chloroform and ether anesthesia. If the chloroformed individual is aroused from his sleep he can tell exactly when he lost consciousness and what his last thoughts and sensations were, and if the narcosis was at times not quite deep enough, the patient often knows what transpired during such intervals; more of what was said during the operation is often known by him than we care for him to know. In deep alcoholic

intoxication, on the other hand, slight intimations of retrograde amnesia are shown; one who has been deeply drunk knows that in the morning he remembers nothing of the events of the preceding evening, nor of the events or actions which happened during the beginning of his spree.

Very characteristically, retrograde amnesia occurs after stupefaction from carbonic oxide, and in those who are hanged, cut down, and after prolonged unconsciousness, recover their senses.

Fallot observed retrograde amnesia in a woman, 63 years old, who had been poisoned by carbonic oxide, and who was unconscious for three days. This amnesia covered a period of three days and more, prior to the poisoning; it lasted a considerable time. Wollenberg discusses four cases of his own and some previously described by other writers, who had amnesia from being hanged.

If an individual who is hanged and in an unconscious state is immediately freed from the rope, he differs from the patient who has concussion of the brain in no way except the cyanosis of the face. He gives the impression of one dying, the pupils are midway or completely dilated, and are perfectly inactive or react very sluggishly; the pulse is slowed, at times irregular; the temperature is normal or a little elevated; vomiting may occur; as he begins to rouse up, frequent vigorous motor disturbances are in evidence; the patient is next entirely disorientated and knows absolutely nothing of his attempted suicide. The amnesia extends backward over a certain length of time before the attempt at suicide; in one of Wollenberg's cases it was thirty-three hours. The amnesia disappears by degrees, but there is no recollection of suicidal effort. Just as in concussion it happens here that the defects of memory are filled up with imaginary ideas. A man, 58 years old, asserted that his scar from a rope around his neck was made in the campaign of 1866. It is interesting that, according to Wollenberg, retrograde amnesia occurs also in those who are drowned, whether it be due to suicidal intentions or accident. Amnesia cannot therefore be attributed to brain anemia from compression of the carotid arteries and venous stasis from compression of the jugular veins; the interruption of the supply of oxygen to the brain suffices to produce it.

In what light then shall we look upon the symptoms of concussion resulting from a single blow upon the skull? In what manner is the force conveyed from the skull to the brain, and what is the nature of the injury which the gray substance of the cortex and the centers lying in the medulla oblongata receives? In spite of the numerous physical and physiological experiments directed to this end, it is at the present time impossible to answer these questions positively.

We next bring up the long known and self-confirmatory fact that evidences of concussion up to a certain point stand in inverse ratio to the severity of the injury resulting from a blow against the skull. In a skull which remains uninjured one often sees marked manifestation of concussion, yet sees them wanting where local shattering of the vault is present.

A woman was attacked by highwaymen and was struck in the head with an ax; she received a depressed fracture; she fell to the ground and was stupefied a few minutes, but not entirely unconscious. She got up and was scarcely dizzy; she could give all the details of the attack and recognized the perpetrators again when placed before her.

Concussion does not result in such cases because the force spends itself in producing the fracture, before it reaches the brain as a whole.

Severe wounds of the brain, too, are not necessarily associated with symptoms of concussion. A suicide who has shot himself through the temple and into the brain with a cheap, poor revolver, often retains unclouded consciousness, and does not fall to the floor at all; disturbance of consciousness is due to hemorrhage in the brain.

Bardeleben saw a man who drove a four-

cornered drill nine centimeters into his temple with a hammer without disturbance of consciousness. Larry reports the case of a soldier through the middle of whose brow a ramrod entered and emerged at the left side of the nape of the neck; with the ramrod sticking through the brain, without loss of consciousness, he dropped back partly on foot, partly by wagon, a journey of three-quarters of a mile.

Also when a piece of the brain is cut away at the stroke of a sharp sword, the wounded individual does not necessarily lose consciousness, examples of which are given by the old military surgeons. The application of force to the brain produces unconsciousness, as a rule, according to Kocher, only when the gray matter in its entirety, or, you may say, in the greater part of its extent, is affected.

Of the physical experimental investigations as to the effect of blows upon the empty and upon the full cranium—that is, filled with brain or brain-like substances—those of Kocher and Ferrari, as well as those of Tilmann, are significant.

Tilmann dropped a skull filled with brain or with paste ten meters upon a stone floor, and then for comparison an empty skull, the weight of which was made equal to the other by placing lead in it. The filled skull broke into many more pieces than the empty one. A glass bowl completely filled with gelatine breaks when struck to a much greater extent than one half full of gelatine. If one directs the blow so that it strikes the filled half of the bowl, then only the filled half of the bowl bursts and the fissures terminate blindy in the empty half while the bowl entirely filled is demolished. Ferrari and Kocher filled the skull with gelatine and placed small coverglasses in the gelatine. Then they dropped a ball weighing three kilos from an elevation of 70 to 150 cm. upon it. If no air is present between the cranial wall and the gelatine, if the wall is not too thick, and if the ball strikes exactly against the skull, almost all the coverglasses are broken by the experiment, if they are not further than 5 mm. from the internal table, especially those lying in the direction of the blow; but not these exclusively, those lying lateral to it are also broken.

The results of the experiments show that on application of a powerful blow against the skull instantly a hydraulic pressure, centrifugal in direction, is developed, which thrusts the surface of the brain against the cranial wall, and which is so great that it is substantially divided between sudden stoppage and the extent of fracture of the skull. Clear examples of this effect are sometimes seen in fractures of the skull with entirely isolated comminution in the roof of eaeh orbit and areas of contusion at corresponding points on the brain surface in the region of the frontal lobes. According to Kocher the fragments in such cases are sometimes found visibly driven down into the orbits.

A similar hydraulic pressure comes in much greater intensity in gunshot wounds of the skull, if produced by the modern military guns with the enormous velocity of their projectiles, as has been shown by the investigations of von Schjerning; here the blow produces an explosive effect at ranges up to 1600 meters.

It is comprehensible without further discussion that a marked bruising of the brain surface can be produced by such a blow, even when it is not violent enough to produce fractures of the skull, and that considerable contused foci and lacerations of tissue and vessels will be found, which leave small hemorrhagic spots.

Still it remains an open question how we are to look upon symptoms of concussion disappearing after some hours or days. For it cannot be admitted as proved by the complete and early disappearance of all symptoms, that in these cases we have to do with only vascular rupture and tissue destruction, however small.

It is difficult to answer this question experimentally. While the effects of slowly increasing pressure on the brain can be studied at leisure with the aid of the manometer, the

curves of the respiration and the blood-pressure, and section of the vagus nerves, etc., in concussion of the brain we must deal with momentary action, which we cannot experimentally produce independent of incidents the exact measure of which is wanting and the consequences of which, especially as related to the disturbances of consciousness, are particularly difficult to establish in animals.

Early investigators, such as Pirogoff, Alquie and Beck failed to produce concussion of the brain in animals without associated lesions of the brain. Koch and Filehne then advanced to the extent that instead of a single heavy blow, they employed a series of rapidly successive light blows, in which, in place of the stupefying stroke upon the head, a succession of gentler ones were tried, on an average of two a second. This hammering was continued from thirty to fifty minutes. It was observed that the procedure led first to excitement, then to crippling of the individual centers in the medulla oblongata, to slowing of the respiration and the pulse, to dilatation of the pupils, reduction of the temperature and a complete loss of will-power. Kocher very correctly calls attention to the fact that a series of quickly successive blows is something entirely different from a single blow. According to the investigations of Stirling, Rosenthal, Wundt and Ward, if a series of repeated irritations of peripheral nerves is produced, and the time between the successive stimuli be less than four-tenths of a second, then a summation of the irritants occurs; according to the experiments of Koch and Filehne the same thing happens; we have to deal with a similar summation of the stimuli and the consequent fatigue and exhaustion of brain. It does not seem positively proved by the literature that the most important symptom of concussion, prolonged unconsciousness which disappears after a time, is really accomplished by hammering on the head of animals. Most of the experiments were done while the animals were under the influence of morphine, chloroform or curare, and were thereby entirely unfitted for judging of their psychical functions, which in animals is possible at all only in a very slight degree.

Duret injected fluid with various degrees of pressure into the interior of the skull and produced thereby phenomena of concussion. On forcible injection of greater quantities he produced lacerations in the floor of the fourth ventricle, dilation of the aqueduct of Sylvius and of the central canal of the spinal cord, all accompanied with hemorrhages, especially in the wall of the fourth ventricle. One can produce similar hemorrhages by blows on the head, in various regions according to the point of application of the force. Basing his opinion on these experiments, Duret believes that concussion phenomena are to be explained on the hypothesis that a wave of cerebrospinal fluid is thrust against its limiting walls and reflex contractions of the afferent cerebral vessel result, and that concussion therefore is cephalorachidian shock. Since we know, however, from the experiments of Tilanus and Deucher, that the phenomena of concussion of the brain and of compression may be experimentally adduced in a similar way by section of the obturator ligament of the atlas with free discharge of the cerebrospinal fluid, though at first with somewhat higher pressure, just as in the unopened skull, and since, according to Deucher, the phenomena of the concussion type follows hammering on the skull as well if the cerebrospinal fluid is escaping as if it is not; therefore, evidently cerebrospinal fluid plays no such important role in the causation of concussion as Duret ascribes to it, although the forcible impact and weight of pressure consequent upon driving of the fluid toward the spinal canal, as a result of the suddenly increased intracranial pressure cannot indeed be wholly without significance, especially in the fourth ventricle.

Kocher, Maasland and Saltikoff placed an easily passing steel cylinder in a trephine opening; the cylinder must fit loosely enough to move easily; they then loaded this suddenly with lesser and greater weights. By making a

sudden thrust they could produce cessation of respiration and an effect on the pulse indicative of vague irritation, these lasting as long as twenty seconds; by suddenly placing a heavy weight upon the cylinder they also produced stoppage of the heart beat. These experiments naturally produce mechanical conditions only, similar but not identical with those present in a case of concussion in man, and leave many points unexplained.

Above all, it remains a question how great a part acute anemia of the brain plays in the phenomena of concussion; this anemia must stop at a certain degree on suddenly and markedly increasing the pressure in the cranial cavity. From the experiments of cranial pressure it is established that first the veins, next the capillaries and the small arteries are compressed by increasing the pressure, that the blood with the cerebrospinal liquor are "pressed out of the brain as from a sponge" (von Bergmann), and this anemia has been frequently looked upon as the sole cause of the phenomena of compression. Indeed, it is incorrectly looked upon as such. *A priori* it can be accepted that a crippling of the mass of nerve tissue constituting the brain takes place directly as a result of the pressure without the interposition of the anemia, since one may, as we shall shortly investigate, cripple a motor nerve by the administration of transient pressure; this may be done in the excised sciatic nerve of the frog, in which circulation of the blood cannot be considered a factor.

Sauerbruch was able, in his differential pressure chamber, to observe directly in trephined animals, that the brain pressure symptoms may be present without anemia, even when the circulation in the brain vessels is above normal. Wittowsky, as well as Schiff and Goltz, was able to produce phenomena of compression in frogs by striking their heads against a hard object, after excision of the heart. Koch and Filehne also were able to produce their hammering symptoms in Conheim's salt-frog. Polis found that hammering in the case of rabbits produced symptoms of concussion much more quickly in rabbits whose brains were rendered anemic by ligation and compression of the afferent brain arteries than in normal animals, and that the anemic animals recover much more slowly. The experience of the ancient surgeons corresponds with these experiments, for they all advised against blood-letting in concussion of the brain. The acute anemia apparently reduces the power of the brian to resist the consequences of the mechanical injury, as it likewise reduces that of resisting the consequences of narcotics. In patients who have suffered hemorrhage, a few whiffs of chloroform often suffice to produce narcosis.

It is all the more difficult to determine the state of unconsciousness due to anemia alone in concussion of the brain, because the pressure is only momentary. If the injured one does not instantly die, if breathing and heart action remain, though impaired, we should thereby led to think that the circulation of the blood in the capillaries of the brain would be quickly re-established and that consciousness would, as in an attack of syncope, quickly return; but this happens indeed only in the light cases. If one trephines for compression and cleans out the blood clots, the cessation of pressure symptoms often becomes immediately or shortly manifest; the patient moves the previously paralyzed extremity, he responds to calls, even before he has been removed from the operating table, while he previously lay in the deepest coma, his consciousness is entirely restored in a few hours. The young man whose case is reported above demanded a few hours after the operation to be allowed to get up, for he had bought a theatre ticket the day before and would not sacrifice it. And in such cases the compression and the anemia of the brain under pressure, as is known, has often continued for hours before operation is undertaken, while the unconsciousness of concussion, produced by a momentary increase of pressure, lasts relatively much longer. In those hanged and those drowned a complete interruption of the circulation to the brain has

been present at least for some minutes. In narcosis produced by ether and chloroform the old theory that the narcosis depended on circulatory disturbances cannot be maintained.

Durham found positively in trephined dogs that during natural sleep anemia of the brain was present; Claude Bernard proved that during the stage of anesthetic excitement hyperemia was present and in deep narcosis anemia, but this anemia was not at any time so marked as that occurring during natural sleep. In amphibians, whose brains continue to perform their functions some time after complete interruption of the circulation, narcosis comes just as easily as in mammals, and frogs whose blood has been replaced with salt solution are narcotized with chloroform and ether just as readily as when they are normal.

Our understanding of narcosis has recently been very much enhanced by the fundamental work of Hans Meyer and Overton. Both investigators have brought proof that the effect of indifferent, non-basic, narcotics stands in the closest relation with their solubility in the so-called cellipoids, the fatty substances, notably abundant in the gray matter of the brain, such as lecithin and cholesterin. The narcotic power of anesthetics is so much the greater, the more easily they are soluble in fats in relation to their solubility in water and in watery fluids of the organism. According to the hypothesis of H. Meyer and Overton, based upon these facts, narcotics change, by virtue of this loose combination which they enter into with the cellipoids, the physical condition of the cells so that their function is destroyed.

We must consider, therefore, in cases of traumatic narcosis and the narcosis from asphyxia due to hanging and drowning, that disturbing cell changes causing suspended function are certain, conditioned in these cases on the momentary withholding of oxygen, the accumulation of carbon dioxide, and in concussion slightly on the quickly disappearing brain anemia, but in the largest measure on the mechanical injury *per se*. How the mechanical insult accomplishes such an injury is by no means clear.

As yet it has not been possible to demonstrate microscopically the presence of changes in the ganglion cells of the brain constantly and with certainty.

Scagliosi repeated the hammering experiments of Koch and Filehne and investigated the brain, if the animals died. Death resulted after from one to twenty-four hours; only the cases without fracture of the skull were used. He found varicose atrophy in the ganglion cells of the brain, degeneration hypertrophy of the cell body, chromolysis, vacuolation, and the conversion of the nuclei into a homogeneous mass until the structure of the ganglion cells disappeared, and the same changes less intense and less widely distributed in the ganglion cells and glia cells of the spinal cord. Changes are observed in the neuroglia cells as early as one hour; in the ganglion cells they are seen first after seven hours in considerable abundance, and after twenty-four hours all cells are changed. Macpherson confirms similar changes after beating on the head.

As a means of elucidating concussion such findings are of only very minor significance. A prolonged deadly maltreatment of the brain cannot be considered the equivalent of a single mechanical insult, which, to be sure, produces severe brain phenomena, but phenomena which will entirely disappear. Further investigations of histological changes in the central nervous system do not pertain to the brain but to the spinal cord. They were undertaken on animals by von Schmaus and others, who had gained their notion from the so-called concussion of the spinal cord.

Many surgeons, as for example Kocher and Stolper especially, claim to know nothing at all about concussion of the cord; it is certain that a condition in the cord analogous to concussion of the brain, if occurring at all, at any rate appears exceedingly rarely. Mention of concussion of the cord, analogous to concussion of the brain, can be made only on condition that where in the latter the symptom

of unconsciousness appears, the symptom paraplegia must be substituted in the former; this paraplegia must appear in full intensity instantly the blow is struck, and then, after the expiration of some hours, days or at most weeks, again entirely disappear. I have, in spite of considerable experience with traumatic cases, which have stood at my command for many years, not yet seen such a case, and most of the cases which are reported in the literature as concussion of the cord prove on closer investigation to be cases of contusion of the cord or hemorrhage into the spinal canal. Yet by all means the literature contains some cases which meet the clinical postulates of spinal concussion.

Thus, for example, Wagner reports the case of an officer in von Bruns' clinic, who, while riding a bicycle very rapidly, ran into a grave and after two severe jolts, affecting his whole body, fell. Immediately both arms and legs were paralyzed, sensation was gone in the legs, severe pains were present in the hands, and the patient had to be catherized. Already after a couple of days the paralysis had begun to disappear, after four weeks he could go on crutches and was completely well after some months. Hartman describes a similar case.

The greatly protected situation of the cord in the spinal canal, as compared with the brain in the skull cavity, explains the rarity of concussion of the cord without other injuries. The dura may be considered as lying immediately on the brain, or at most is separated from it by only a thin layer of cerebrospinal fluid; the dura lies close against the skull and is at various points fastened directly to it. The cord lies or hangs much more freely in the relatively very wide spinal canal and on the average is surrounded by a much larger quantity of fluid; between the dura and the surrounding walls of the spinal canal a soft pillow of venous plexuses and a cushion of fat intervene; finally the gray matter of the cord does not lie on the surface, but within the cord.

From the animal experiments of Schmaus, which von Kirchgaesser repeated, it is shown that repeated blows against the back of rabbits by all means effects a transient paralysis of the spinal cord.. The animals were bound with their backs against a board, and the blows were produced by striking the board with a hammer. One blow never suffices; repeated blows cause an increase of sensibility, a cumulative effect. After the blows spasm of the lower extremities appear, quickly transient; and finally some further blows produce persisting paralysis of the legs, which remains for some days, and then disappears. On investigation of the cord we often find, though not always, insignificant dural and subrudal hemorrhages; in fresh cases the findings are chiefly negative. If the animals are killed after eight to fourteen days, then degeneration of the axis cylinders and disintegration of the cord, typical ascending and descending degeneration, later gliosis with cavity formation are found. According to Schmaus we have to deal with a marked irritation and fatigue of the nerve filaments which disappear or lead to a necrosis of the nerve elements. The changes demonstrable in the ginglion cells are much slower to manifest themselves and must be looked upon as secondary. As has been demonstrated by nerve section and avulsion of the peripheral nerves in animals, every injury of a neuron calls forth histological changes in the ganglion cell belonging to it.

If contusion of the spinal cord certainly occurred in the experiments of Schmaus, then indeed will we not, without further evidence, be compelled to attribute the paralysis coming after ordinary blows and then disappearing, to such contusions and hemorrhages in the spinal canal, for the investigators claim that often no hemorrhage can be proven. Much more, the results of the experiments definitely prove that mechanical insults not only may produce a transient paralysis and, by frequent repetition and sufficient intensity of the insults, a traumatic necrosis; these results may come without the aid of acute anemia, and without

demonstrable laceration and contusion with their attendant escape of blood.

In the peripheral nerves transient disturbances of function are well known, due to blows, thrusts, pressure or stretching. I need only to recall the parasthesias in the region supplied by the ulnar when one strikes the elbow, the paresis of the brachial plexus from stretching and pressure in cases of dislocated shoulder, the sleep-palsy due to pressure on the brachial plexus, the transient paralysis of the radial in fractures of the humerus, the transient paresis after firm application of an elastic tourniquet to an extremity.

We are especially indebted to Bernstein, Grutzner, Ducceschi and Bethe for physiological investigations on the interruption of conductivity of nerves, due to pressure or other kinds of local injury.

Bethe, just as Ducceschi did before him, applied a strip of ivory containing a longitudinal groove to the sciatic nerve of the frog; he then compressed the nerve by tying a thread across it at a single point and attaching a weight to the thread in such a manner as to cause the thread to press upon the nerve. Application of a weight of 40 to 50 gm. for awhile, several seconds, succeeded in completely interrupting the nerve's capacity to transmit the strongest stimuli. When the compression ceases, capacity for transmission returns, often after a few seconds. Bethe then studied microscopically the nerves experimented upon. The axis cylinders at the point of compression are extensively reduced in size and closely pressed together, and the nerve origin nuclei are very much elongated. The fibrils show also a certain change of their former behavior. They lose by compression almost all their affirmity for staining materials, and become susceptible of deep dark staining if their conductivity has been restored. Bernstein found in his experience of tiring the nerves by various local irritations that on striking the sciatic nerve of the living frog for three minutes with the back of a knife the nerve becomes incapable of conveying stimuli for twenty minutes, and that the nerve recovered this capacity within the subsequent twenty-five minutes.

Ducceschi's experiments show that a motor nerve slightly compressed no longer takes part in producing reflex muscular contraction, while if this irritant be applied to it at any point proximal to the compression reflex contractions of a vigorous nature result. One sees from this how slight the stimulations of nerves, which occur in life processes, much weaker than the stimuli produced by electric currents in animal experiments, and how easily they may be interrupted by mechanical injury. Add to this that all injurious agencies, for example the narcotics also, affect the central nervous system much more than the peripheral nerves (Bethe). If one considers all these facts, then one is enabled at least in a measure to understand how the production of temporary, but long continued crippling of the nerve fibres in the brain may result from a single powerful blow against the skull, and from the associate sudden increase of brain pressure due to striking of the convex surface of the brain against the cranial wall, and the striking of the medulla oblongata against the bounding foramen magnum.

In conclusion, I should like to call especial attention to the fact that the clinical picture of concussion is something especial in spite of the absence of sharp distinction from contusion of the brain; it is peculiar on account of its temporary phenomena and on account of the absence of demonstrable pathological anatomical changes. It deserves a special name; and the name of concussion of the brain, handed down for ages, serves the purpose best. Because there is no special kind of concussive vibrations apparent, Kocher, to whom we are indebted for his penetrative studies of brain injuries due to blunt force, wishes to see the term "concussion" eliminated and the term "acute brain pressure" substituted in its place. But if the term "concussion" calls forth false conceptions as to the action of the force, the term "acute brain pressure" is not entirely free

from the same objection. Using the latter term we think more of the pressure setting up actuely, but indeed lasting a definite time, than of the momentary action of a blow; and the disappearance of the phenomena, which is at least signified by the term "concussion," finds no expression in "acute brain pressure." It seems to me there is not sufficient ground to replace the significant term "concussion," "commotio-cerebri" with another, since it has been in use for about 200 years.

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THE COUNCIL ON MEDICAL EDUCATION OF THE AMERICAN MEDICAL ASSOCIATION AND ITS RECENT MEETING.

Seven years ago the House of Delegates of the American Medical Association, realizing that medical education in this country was in a chaotic and unsatisfactory state, decided to appoint a permanent council, the duties of which were to investigate and bring about a better condition of affairs, if possible. The original Council was composed of Dr. A. D. Bevan, of the University of Chicago, Chairman; Dr. Victor C. Vaughn, of the University of Michigan; Dr. W. T. Councilman, of Harvard University; Dr. Charles Frazier, of the University of Pennsylvania, and Dr. J. A. Witherspoon, of Vanderbilt University.

The Council was immediately organized and the work begun in earnest that fall. An investigation showed that there were about one hundred and seventy medical schools in the United States, as compared to one hundred and seventy-two in the combined civilized world, outside of this country. It was at once apparent there were entirely too many medical schools in this country, many of which had been organized by a combination of doctors without any university or college connection, some of which were doing good work, others unsatisfactory. The same may be said of a number of schools connected with universities, the deficiency being of such a nature as to demand inspection of all the colleges, which has now been completed the second time through the Council and at the expense of the American Medical Association. At the first investigation many were found poorly equipped, and in at least half the teaching unsatisfactory, but at the earnest solicitation of the Council, which, though without legal power, has wielded a mighty influence for the good, by unifying all educational interests, as well as establishing a thorough co-operation with the various State Examining Boards of the country. This enabled the Council to establish, first a minimum requirement for entrance in the study of medicine. The improvement following this suggestion in the personnel of the student body has been remarkable and very encouraging. The next work was to try and establish a curriculum of more or less uniformity in the hope that reciprocity among the States could be realized. This curriculum was placed in the hands of one hundred well-known teachers, selected from every section of the country, who entered the work with a zeal and enthusiasm which was, indeed, encouraging to the Council and at the same time assured better things for medical education in this country. The work along both of these lines has progressed far more rapidly and satisfactorily than even the most sanguine could have expected. Improvement in requirements and methods of teaching, together with that much desired amalgamation of schools in various cities of the country has progressed sufficiently far to insure a continuation of the good work and justifies the expression of the hope that in a few years States, having entirely too many schools, will form this combination, until seventy-five or eighty will represent the sum total of medical colleges in the United States, a very desirable condition to which every man

interested in the welfare of his profession should give his unqualified endorsement.

While these improvements may work seeming hardships in some quarters, it will only take a few years to demonstrate even to those now affected the wisdom of the course persued and the absolute necessity of elevated standards in medical teaching, if we would hold our place among the learned scientific professions in this progressive age.

The recent meeting in Chicago was one of the most successful ever held, being largely attended by educators from all parts of the country, including College Presidents, from a number of the best universities, as well as Dr. Pritchard, the head of the Carnegie Foundation for Teachers, who a year ago very kindly promised his assistance to the Council, both in inspection and ways and means, necessary to bring about the improved conditions so necessary to modern medical teaching. These men not only were present, but delivered masterful addresses, which were both inspiring and encouraging to all who have this work at heart. In addition, almost every State in the Union was represented by a delegate from the State Examing or Licensing Boards, who not only promised thorough co-operation, but, as in the past, given great encouragement, especially in bringing about more uniform laws in the various States in the future. One of the special objects of this conference being the report of a committee, outside of the Council, and appointed from widely distribute territory for the purpose of formulating suggestions as to a uniform law or medical practicing act which would, not only do justice to the profession and assist in elevating the personnel of its members, but would insure more intelligent physicians, from whom the people of this country must receive medical attention and the passage of which by the various States would practically insure reciprocity, a condition very much desired throughout the entire country.

The present condition of affairs is, to say the least, very annoying, especially where men have practiced medicine for some years creditably in one State, and who, desiring to change their residence, must be subjected to annoying examinations, even in sister State Boards, thereby making a hardship often on able practitioners, who may have grown somewhat rusty on the fundamental branches. This, together with the fact that such uniform acts would go a long ways towards preventing any State from becoming the dumping ground for charlatans and irregular practitioners run out of States having better laws and boards with more power to enforce than others. Thus it will be seen that in seven short years most marvelous improvements in the methods of teaching and the educational qualifications of the students has taken place and thoroughly demonstrated the fact that it is perfectly possible for every section of this country to bring its standard up in uniformity and thoroughness to those of any other section, and if the sign of the times can be taken for anything, it shows beyond a question of a doubt that there is no place for the commercially organized or individually run medical schools of this country. Again, all schools must have some college or university connection, thereby receiving either aid from the college or university, or the State, if they would fulfill their true mission in promoting the higher standards and increased requirements of medicine of today, and while it is not the disposition of the Council, or any member of it, to become dictators or prosecutors of these schools not coming up

to the requirements of the day, yet its policy of making public its findings and the coalition of all forces interested in higher medical education must of necessity bring about a condition of affairs in this country which are promising for the future and to which any medical man can point with pride, for it is the work, after all, of the American medical profession, and only by concerted action on their part, has the Council been able to accomplish so much and are able to look with confidence to the future, with its promises of even greater things for American medicine. J. A. W.

THE NEED OF MORE CAREFUL PHYSICAL EXAMINATIONS.

It cannot be gainsaid that amid the various duties of the practitioner too much dependence is placed upon subjective symptoms and too little upon objective symptoms. It has been truly said that more errors are committed through careless and slovenly examinations of the patient than through ignorance of the disease process or inability to interpret the findings if they were correctly made.

It was said of the famous Dr. Agnew that the integument to his eyes was a transparent covering of the human body, so intimate was his knowledge of anatomy. It has also been said by one of the most gifted diagnosticians of his day that human beings would receive vastly better attention if each patient could come before the examiner stripped. A great many evidences of morbid conditions and of chronic and unrecognized disease would be at once apparent, if this were the rule. Varices, herniae, neoplasms, sinuses, malformations, muscular wasting, or contraction, cold abscesses, enlarged glands and deformities, traumatic or pathologic would be recognized. Abnormal conformations of the chest, venous thrills, displacement of the apex beat of the heart, changes in the structure and nutrition of the skin, cutaneous lesions themselves are covered by the clothing; tumefactions, glands and goiter that are partly or intentionally hidden, concealed ulcers or tumors, may be of malignant character, especially of the breast, palpable evidences of lues, to say nothing of other venereal conditions would thus be instantly revealed.

These and many other obvious conditions could be seen at a glance, and important data could be obtained in a moment, that might otherwise never be mentioned or discovered, or indeed that might be concealed intentionally or ignorantly.

While stripping the patient, with its very great advantages cannot always be employed, as much of the body as possible, particularly the portions apparently involved, avoiding unnecessary exposure, of course, should systematically be subjected to the scrutinizing inspection of the clinician, as well as to the oft-neglected physical study. The rule of Sir George Humphry is sound, and becomes more helpful when pondered: "Eyes first and much, hands next and little, tongue not at all." One can be sure of what he sees, but not of what he feels and certainly not of all he hears from the patient. The eyes may tell everything, the hands may hurt very much and tell nothing.

There can be no better routine practice than the systematic examination of the viscera, particularly thoracic and abdominal, in all cases. How frequently does it happen that unsuspected heart lesions are first discovered at examinations for insurance, and how much more essential is it for the attending physician to be acquainted with the condition of the vital organs, as well as their functions, no matter

what is the deviation from health for which the patient applies for relief.

Our lapses in the important regard of visual inspection of the body are frequently imperfect, and at times startling. Surgeons have been called many miles to operate for intestinal obstruction which was really due to strangulated hernia that frankly told of the exact etiology for which it had never been examined. To be sure it is more important to understand that the patient has obstruction and overlook the hernia, than to diagnose the hernia and be oblivious to the impending or present obstruction. The writer has seen a case of specific epididymitis in a cryptorchid diagnosed as strangulated hernia when pulling the cover down a few inches further disclosed the tell-tale origin of infection. A patient with well marked symptoms of localized peritonitis diagnosed as appendicitis subjectively discloses a small ovarian cyst twisted on its pedicle, the size of a four months pregnant uterus. A moment of inspection invalidates weeks of subjective symptomatology.

Cases of physiological enlargement of the uterus, mistaken for various and sundry, albeit improbable, conditions are too well known to deserve mention.

The typical shortening and limping gait of a lad, stripped, betokens tuberculosis of the hip, erroneously called, that rare thing, a dislocation of the hip, and is negated by the other well-known physical signs.

Inspection of the abdomen in the presence of pattern-like waves of peristalsis indubitably indicative of chronic intestinal obstruction is one of the most satisfying physical findings when looked for.

How frequently it has happened that an illy conducted physical examination of a child who has received a fall fails to find a fracture of the collar bone that ten days afterwards so mortifyingly discloses its presence by the all too prominent callous.

Perhaps, our greatest dereliction consists in failure to thoroughly percuss and auscultate the chest in cases of high temperature, without a cough and the greatest objection to the mud-pie treatment of pulmonary and pleuritic inflammation consists in the restriction of frequently repeated stethoscopic examinations which their presence entails.

Who has not seen the tremendous distention of the bladder after labor, with deceiving dribbling of urine that the physical means of percussion followed by catheterization does not relieve? The detection of ascites is so important as touching upon diseases interferring with portal return, as well as tuberculosis and other processes in the peritoneum that its detection should not be a matter of omission.

In short, should we not be mechanicians, more than oracles to whom patients detail a lot of woes, with irrevalent interpolations for our translation, to the end that we unerringly proceed to the detection of the physical causes, if such there are to explain the matter. When the symptoms are so bizarre and remarkable, should we lose sight of the physical sign-posts of dilated pupils, cold hands and feet, poor nutrition, undue apprehension, bitten nails and other evidences of neurotic stigmata that to the astute observer is so etiologically evident.

The language of disease is, to be sure, a beautiful and satisfying thing to the clinical linguist, but let us not neglect the more homely and painstaking physical examination of the wonderful machine, whose repair we are called upon to undertake. W. D. H.

ABSTRACTS OF CURRENT LITERATURE

DERMATOLOGY.

GRAIN ITCH.

By Schamberg. The Jour. Cut. Dis., February, 1910.

In the late spring of 1901 an unfamiliar eruptive disease appeared in Philadelphia and vicinity and attracted the attention of the skin specialists of the city. The cause of the disease remained obscure despite careful interrogation to ascertain the cause of the affection and the explanation of the household epidemicity.

Dr. Goldberger and the author jointly solved the question during 1909. The disease was prevalent in Philadelphia and neighboring towns, and found among the sailors on several boats.

Among the boat crews it was ascertained that the disease was confined to the sailors who had slept on some new straw mattresses. In every case the individual had recently slept upon a new mattress and the mattresses were traced to four factories.

Careful examination excluded the covering of the mattresses as the source of infection and placed it upon the straw. The straw was sifted and the mite found which was identified by Nathan Banks, United States Bureau of Entomology, as very close to, if not identical with the *Pediculoides Ventricosus.* In order to demonstrate that the mite was the cause of the disease several mites were placed on the bare shoulder, arm and chest and in sixteen hours the characteristic eruption appeared from the bites of the mites.

Eruption. The disease is characterized by an eruption consisting of wheals, many of which exhibit at their summits a central pinpoint sized vesicle. This is the peculiar lesion of the disease produced by the bite of the mite, and is so characteristic as to immediately suggest this affection. The contents of the blisters are clear, but for a short time, and become lactescent and pustular. The lesions vary in size from a lentil to a finger-nail, rounded or oval in shape, and are elevated 1 or 2 mm. The color is rose tint. The vesicle or pustule is usually minute, not exceeding 0.5 mm. in diameter, but sometimes may be larger.

Usually the eruption is profuse, involving the neck, body and in a lesser degree the arms and legs. The greater number of lesions are on the trunk. The hands and feet are nearly always free.

Really three types of the eruption may be observed; (1) urticaria-vesiculo-pustulosa type, (2) varicelloid type, with large central vesicle or pustule, and (3) erythema multiforme type.

The itching was intolerable and worse at night and seriously interfered with sleep.

Systemic symptoms. In the early part of the attack light chills with temperature of 100 deg. F. to 102 deg. F., may exist in some cases, while others will be afrebrile, but complain of anorexia and malaise, while others will not feel ill at all.

Diagnosis. The disease may be confounded with urticaria, chicken-pox and scabies, and the writer had known of many errors. In one case even smallpox was suspected.

Treatment. As the parasite only perambulates upon the surface and does not burrow in the skin the treatment is not severe. Frequent warm soap baths would doubtless suffice, but an ointment of betanaphtol, sulphur and lard was found of great service, as it not only destroyed the mites, but relieved the cutaneous symptoms. The clothing should be disinfected to prevent reinfection, and the mattresses should be disinfected or burned.

The author discusses the literature upon the subject, some of it dating back to 1829, and is interesting from an historical standpoint. Several illustrations are given. J. M. K.

SURGICAL.

The Treatment of Abortion.

By Herbert Marion Stowe, M.D., Chicago. Surg. Gynecol. and Obstet., January, 1910.

This article covers certain phases of the subject very fully, besides giving a brief report of 750 cases occurring in the outdoor department of the Chicago Lying-in Hospital. The author first calls attention to the importance of treating all cases of uterine hemorrhage accompanied by intermittent pelvic pain in a woman of child-bearing age as acute abortion. The diagnosis and treatment of threatened abortion are discussed, emphasizing absolute rest in bed until all pain and hemorrhage have ceased.

Treatment of inevitable abortion depends on conditions:

1. *Cervix closed. Fetus and decidua in utero. Hemorrhage.* Treatment of election is expectant, employing the vaginal tamponade, preferably of cotton.

2. *External os closed. Fetus and decidua in cervix and uterus. No hemorrhage.* Dilate external os, tampon vagina and leave to nature.

3. *Cervix dilated. Fetus and decidua in utero. Hemorrhage.* Where hemorrhage demands interference use gloved finger as curette. Detach and remove manually or by Hoening's abdominovaginal compression. Packing is usually unnecessary. Best in second and third months.

4. *Cervix dilated. Fetus and decidua in utero. No hemorrhage.* Prolonged retention is dangerous. Empty the uterus.

5. *Cervix closed. Fetus expelled. Decidua in utero. Hemorrhage.* Dilate cervix. Steel dilators must be used with care. Danger of sepsis from laminaria tents. Where immediate removal is not urgent, use uterovaginal tamponade. Digital curetage is to be preferred. Steel curette never to be used in presence of extra-uterine puerperal sepsis.

6. *Cervix closed. Fetus expelled. No hemorrhage.* Dilate with cervicovaginal tampon or manually. Mass is removed manually combined with Hoening's method.

Ergot should not be used until uterus is empty. If all masses palpable to the finger are removed the curette is unnecessary. In sepsis no local manipulations are advised unless the infection is limited to interior of uterus. Provide drainage and let alone. After treatment is along well established lines.

R. W. B.

The Production of Shock by Electric Stimulation of the Abdominal Sympathetic Ganglia.

By E. S. Fowler, M.D., and R. M. Parker, M.D., Chicago, Ill. Surg. Gynecol. and Obstet., January, 1910.

This article gives the results of twenty-nine experiments performed on dogs to show conditions under which it is possible to produce shock or collapse by irritation of the abdominal sympathetic ganglia. It is demonstrated that other deviltalizing influences must be present, such as lowered temperature and hemorrhage. By a loss of 2 per cent of the body weight in blood the animal is rendered susceptible to death from shock when the coeliac and superior mesenteric ganglia are stimulated with 20 milliamperes, galvanic current, for about ten minutes.

The authors are convinced that undue manipulation of the abdominal viscera, and exposure to cold during the operation, make for the same result. Also, that it is immaterial whether the method of weakening the animal is by means peritonitis, hemorrhage, or any kind of trauma that produces the requisite shock, and that it is immaterial whether the final and fatal shock is from an electric current applied to the abdominal ganglia, or to any other part of the body, or whether the shock is produced in any other way, the result will be fatal when the limit of endurance has been reached.

R. W. B.

ANAESTHESIA IN OBSTETRIC PRACTICE.

By Herbert Marion Stowe, M.D., Chicago. Surg. Gyn. and Obstet., February, 1910.

A short historical sketch of the use of ether and chloroform in obstetrics is followed by a comparison of their respective physiological and pathological actions on the human body, especial attention being directed to their comparative effects on the liver and uterine ganglia and musculature. Recent investions show that chloroform produces hepatic toxemia similar to that of phosphorus poisoning. Bevan and Favill state that chlorofom especially, ether to a slight extent, produces a destructive effect upon the liver, kidneys, cardiac muscle, etc., resulting in fatty degeneration and necrosis. This effect on the liver is particularly undesirable in pregnancy. Pneumonia is extremely rare and vomiting the exception if ether is properly given by the open method. Severe, prolonged vomiting is more frequent after chloroform. Mortality statistics are largely in favor of ether in obstetric practice as in other surgery.

CONCLUSIONS.

1. Ether should be used as an anesthetic in obstetric practice when pulmonary complications are absent.

2. Its action upon the uterine contractions in the second stage of labor is preferable to that of chloroform.

3. No anesthetic should be given in the first stage of normal labor.

4. Uterine atony and post-partum hemorrhage are rare following ether anesthesia.

5. Ether should be used in eclampsia in preference to chloroform. Its action is as positive and the danger much less.

6. Ether is far safer to the mother than chloroform. The danger of delayed poisoning is rare.

7. The indications for the use of chloroform in obstetric practice will be greatly limited in the future, when its toxic effects upon the vital organs are better understood. R. W. B.

CHRONIC OSTEOMYELITIS, DIAGNOSIS AND TREATMENT.

By Carl Beck, M.D., Chicago. Surg. Gyn. and Obstet., February, 1910.

The pathology is briefly, but clearly described, referring particularly to the suppurative form and excluding tubercular and syphilitic osteomyelitis. A favorable prognosis can be given if proper treatment is carried out. Symptoms of the actute stage are described as pain, impaired function, local edema (and often abscess) of the soft parts surrounding the bone, and the general manifestations of sepsis. In chronic forms where pus and fragments of bone are discharging from a sinus through which a rough sequestrum may be felt with a probe, the diagnosis is easy enough. But all sinuses cannot be probed so satisfactorily and the orgin of the trouble is often difficult to determine exactly. In these latter cases bismuth paste is injected into the sinus and a radiograph is made, thus revealing the true source of the infection. Several pictures should be taken in a certain rotation and studied carefully to prevent mistakes.

Treatment is by cleaning out the diseased area subperiosteally, forming a healthy cavity into which another injection of bismuth paste is made. This paste fills up the cavity and so obviates an otherwise continued discharge. It also prevents shrinking of the periosteum, which surely results where a prothesisor is not introduced.

The article also contains three interesting cases reports and is profusely illustrated.

R. W. B.

IS THE DEMONSTATION OF THE GONOCOCCUS AS SIMPLE A MATTER AS IS COMMONLY SUPPOSED?

(Eugene Fuller, M.D., New York Medical Journal, Jan. 1, 1910.)

Under this title Dr. Fuller reports two cases showing persistent diplococci, situated within the pus cells and Gram negative, in which no infection occurred in the wife, and

in which the patients themselves recovered entirely after marriage. He questions the possibility of identifying the gonococcus by our present staining methods and thinks that at least some of these diplococci are innocent. He advocates proceedure that will entirely rid the patient of discharge before marriage, but as that is rarely possible, he avoids the extreme view that all these cases are infectious and permits selected cases with only a slight discharge, but containing Gram negative diplococcic to marry. R. L. J.

THE SERO-DIAGNOSIS OF SYPHILIS.

By J. W. Marchildon, M.D. In St. Louis Medical Review, Dec., 1909.

The author traces the history of our recent acquirements in the knowledge of Syphilis, and especially of the Wassermann reaction. He describes the technique, discusses its practical results and sums up its uses as follows: The reaction is of value in all cases in which an ulcer has been present on the genitalia, the nature of which is not clear. Within certain limits the negative reaction is valuable. If there is a tumor or an infection with symptoms, with a negative serum reaction, we can conclude that it is not Syphilitic, that it is not a gumma. If there is an acute exanthem, a skin lesion of some kind, and a negative serum reaction, we can say that it is certainly not due to syphilis. In the presence of hard chancre with a negative Wassermann reaction the chancre may be excised surgically and syphilis aborted. With a chancre present and serum reaction positive, then general infection has taken place and excision of chancre can be of no benefit. In differential diagnosis of many cases such as pseudoluetic rheumatism, Syphilide about the nose, in pregnant women with a suspicion of syphilis is important. The reaction is of value in the selection of a wet nurse and of nurse girls, in order to tell if syphilis has been present. It is being used in Germany as a routine procedure in the examination for life insurance. It is of value in the diagnosis of diseases of the nose and throat, of the eyes, in cases belonging to internal medicine, and in fact whenever the question of syphilis comes up, even in consent to marry. WM. L.

THE TUBERCULIN TREATMENT IN PULMONARY TUBERCULOSIS.

The tuberlin treatment of dispensary patients is being used with good results in many of our large cities. In the Johns Hopkins tuberculosis dispensary conducted by Hammand and Wolman, in which they report (The Johns Hopkins Hospital Bulletin of August, 1909) that they have had 57 cases of pulmonary tuberculosis on tuberculin treatment for at least ninety days, with the following results: Ten patients were apparently cured, in sixteen the disease was arrested, twelve were improved, in eighteen the disease was progressive and one died. In selecting the cases the stage or the extent of the disease is not considered. They have used the following tuberculins in their treatment: (1) Old tuberculin, (2) new tuberculin (3) Bouillon Filtrate. The initial dose was usually .001 milligrams, provided the patient was in fair condition, and smaller if the patient was absorbing toxines from an active lesion.

In the out patient department of the Massachusetts General Hospital, Boston Consumptives' Hospital and the Good Samaritan Day Camp, tuberculin treatment was given the dispensary patients under the supervision of Drs. Hawes and Floyd (Boston Medical and Surgical Journal, January 6, 1910.) They report that out of 143 tuberculous patients treated with tuberculin during the past four years nineteen have died, sixteen have shown no improvement, while 108 have been benefited to a greater or less degree. In no instance have the physicians been able to see that tuberculin has done the slightest harm; reactions have been rare and invariably of a very mild type. In incipient pulmonary tuberculosis, especially in children, tuberculin is a distinct factor in increasing body resistance and in maintaining this resistance so as to pre-

vent relapses. In more advanced pulmonary disease tuberculin will often alleviate distressing symptoms, prolong life and occasionally help to arrest the process. In localized or "surgical" tuberculosis, tuberculin has a marked beneficial effect. Its administration should always be combined with hygienic outdoor treatment. Dispensary patients can be treated with tuberculin, not only with perfect safety, but with benefit, providing that there is a close personal co-operation between patient and physician. WM. L.

COMPLICATIONS IN PNEUMONIA.

F. Forcheimer, Cincinnati (*Journal A. M. A.*, October 30), says that not until 1874 was the importance of cardiac complications in pneumonia fully recognized and only after the discovery of the microbe of the disease our expectations of increased knowledge were met. We have learned that the toxin produced by the pneumococcus paralyzes the vasomoter center in the medulla. It is not yet fully accepted, however, that the heart is directly affected, but Forchheimer does not hesitate to say that the vasomotor paralysis, whether the heart is directly affected or not, is the most frequent cause of death in pneumonia. The clinical picture as given by Forchheimer is as follows: "The evidences are rapidity of heart and sinking of blood-pressure; with this or shortly afterward, there comes tympanites, the patient then presents an exsanguinated appearance, with beginning evidence of collapse; the pulse becomes irregular, empty and so rapid that it can not be counted; symptoms of cerebral anemia begin to appear—delirium, hallucinations, sometimes great restlessness; they gradually disappear to be superceded by stupor and coma; the collapse increases and the heart becomes more irregular; the heart sounds disappear and the patient dies." Various authors have advised digitails in such cases but the author's experience with it has not been favorable. Strychnin, which he next tried, does not prevent this vasomotor syndrome. Because of the peculiar action of caffein in stimulating the vasomotor center and its action on the heart, he has used this drug for the last twelve years in a routine way. It always increases blood-pressure unless there is some organic lesion which itself increases blood-pressure. Its only contrary indication would be already existing abnormally high blood-pressure and danger in increasing it. For prophylactic purposes it is not necessary to give more than from ½ gr. to 5 grs. every four hours. But when there are symptoms of "bleeding into the splanchnic area" it should be given hypodermically, 0.20 gm. three of four times daily. He prefers the double salts (preferably the caffein-sodio-salicylate) as they are more stable when dissolved in water and more soluble and less irritating when given hypodermically than the other salts of caffein. They do just what is claimed for digitalis without its dangers. But occasionally the patient becomes nervous and sleepless with caffein, which is remedied by the reduction of the dose. Other important preventative measures are the fresh air treatment and sleep. In individual cases it may be necessary to reduce temperature. And besides these other dietic, hygienic and therapeutic measures and treatment of symptoms as may seem necessary, especially those affecting the nervous system unfavorably, must be included in the prophylactic treatment. When the symptom-complex has developed, the most energetic measures must be employed, and this is one of the conditions in which the physician must be in constant attendance. Adrenalin, hypodermoclysis with normal saline solution, one or two ice-bags on the abdomen, are all recommended. Adrenalin may be given with the hypodermoclysis, 1 c.c. of 1,-000 solution, as frequently as the symptoms demand as its effects are transient. The danger of dilatation of the right heart has been considerably discussed, but it is a very rare complication of pneumonia. The clinical picture is altogether different from that of vasomotor paralysis; the patient dies in asphyxia

and never in collapse unless the condition is combined with vasomotor paralysis. The simplest treatment in most cases is blood-letting from eight to sixteen ounces, which relieves pulmonary circulation and secondarily the dilatation. It is not necessary in every case. In ordinary cases, the usual treatment of acute myocardial insufficiency, consisting of hypodermic injection of digitalin in large doses, of camphor and ether, and of caffein. The other cardiac conditions which may develop in the healthy heart are pericarditis, acute mild carditis, and endocarditis. The last named *is the* most common complication and the third most common cause for pericarditis. Our knowledge of acute myocarditis in pneumonia is fragmentary. It seems to be the post-febrile form and may cause sudden death from muscular failure. The value of strychnin as a respiratory stimulant is mentioned but it should not be a routine prescription. Nitroglycerin is prescribed, as dangerous in pneumonia. The most dangerous complications are myocardial ones and they should be treated as acute myocardial insufficiency according to the form of myocardial disease and individual conditions.

TUBERCULOSIS.

J. Ritter and C. S. Wheaton, Chicago (*Journal A. M. A.*, October 23), describe the methods used in the Chicago Tuberculosis Institute with special reference to the use of tuberculin. While in coping with tuberculosis they say that they depend mostly on good wholesome and nutritious diet, pleasant environment, home comforts, rest and fresh air, medicines being considered of minor importance, they have used tuberculin in carefully selected cases with very satisfactory results. It must be remembered, however, that tuberculin is not an antitoxin, but a direct poison and its promiscuous use by the inexperienced cannot be too strongly condemned. When the tuberculin is used at all it must be under the constant supervision of the physician. They employ it for diagnotic and therapeutic purposes in infinitesimal doses. For diagnotic purposes in small children, they rely chiefly on the so-called Moro test. For children and young adults, they use principally a 25 per cent. solution of tuberculin, using the von Pirquet method. For adults, a subcutaneous injection of five drops or 0.33 c. c. of a 1 per cent. solution of tuberculin is used. Koch's old tuberculin, properly diluted, is used for both diagnostic and therapeutic purposes. The method of preparation of the solution employed is described in detail. "Koch's O. .T, 1 c. c., approximating 1 gram, is diluted with 0.5 per cent. carbolic acid in physiologic salt solution and five separate solutions are made, including the first to the fifth decimal attenuations of 0.1 gram of tuberculin. In using the hypodermic treatment they begin by using infinitesimal doses or 0.1 c. c. from the bottle labeled No. 5. The selected patients suitable for this kind of treatment are those who do not show any very marked variation in temperature during the twenty-four hours. If there is no marked reaction following the initial injection, a second injection of double the initial dose may be given, but if there is a systematic reaction, the second dose it put off for about a fortnight and is only half the initial one. If only a very slight reaction is manifested after the second dose a third one of 0.3 c. c. from bottle No. 5 is given, and so on progressively increasing. If a patient receiving this treatment after a time begins to show a rise of temperature above 99.8 or 100 F., the injections are discontinued until the temperature is again below 99.5 F., when they are again resumed with one-half the last dose and its effects carefully watched. No injections should be given if at the seat of the last given a little local reaction still lingers, as shown by an area of hyperemia or a nodule palpable under the skin. When large doses are reached good effects are often manifest, but it should always be borne in mind that in all cases showing great activity of the tuberculous invasion, as well as in cases showing the slightest tendency to hemorrhage, and in

all laryngeal cases, tuberculin is contraindicated. The conclusions of the authors are given in the following: "1. In cases of pulmonary tuberculosis without elevated temperature and low resistance, the proper administration of tuberculin is of undoubted efficacy. 2. Tuberculin is capable of producing great injury to the patient and this injurious influence calls for the greatest discretion in its proper administration. 3. There is frequently increased cough and expectoration following its injection. This, in itself, it not an untoward symptom. Tuberculin is an expectorant, *par excellence*. 4. Persistence of such clinical manifestatation as general lassitude and physical weakness should cause the discontinuance of its administration. 5. In the presence of a mixed infection, with high temperature incident thereto, the use of tuberculin is inexpedient. 6. The opsonic findings in dispensary practice are impracticable at this time. Clinical study is absolutely essential in determining the size and frequency of the dose. 7. We caution against the use of tuberculin in advanced cases with positive findings. In this stage alarming results have followed its administration. 8. Tuberculin should not be administered to any patient unless it is possible to obtain an accurate daily record of the case. 9. Pulmonary hemorrhages are contraindications to the use of tuberculin, should slight hemorrhages manifest themselves during the treatment its use need be discontinued at once."

PUERPERAL INFECTION.

A report on sixty-one cases of puerperal infection treated at Wesley and St. Luke's Hospitals, Chicago, is published by T. J. Watkins, Chicago (*Journal A. M. A.*, October 23). The cases were all severe ones. Twenty-eight of them had a temperaure of 103 F.; twenty-eight had an inflammatory exudate in the pelvis, nine of them with a temperature less than 103 F. Six patients had suppurative peritonitis. Blood counts were made as a routine in all cases, but there were few of any special interest. The increase in the leucocyte count varied usually with the febrile disturbance and was not of much practical importance. A low count with a high temperature, however, may be of prognostic value as indicating either low resistance or virulent infection. A continuous decrease of leucocytosis indicates recovery, and the white count is also of value at times in the diagnosis, especially when complications are present. Bacteriologic examinations were made in some cases and were usually disappointing. Watkins considers them often unsatisfactory, as different strains of the same infective organism may vary as much as do the different bacteria. There were the following complications: Iliopsoas abscess "non-tuberculous," 1; pyemic abscess, 1; pneumonia (lobular), probably embolic, 5; phlebitis, 2; intestinal obstruction, 1; acute nephritis, 2. Many cases, however, had some albumen and occasional casts. The routine treatment was as follows: After careful history and physical examination, if the fetus was still in utero, miscarriage unavoidable, and the cervix not dilated, the uterus and vagina were packed with sterile gauze without regard to temperature. The packing was left in for twenty-four to forty-eight hours, according to results. It was repacked if there was not sufficient dilation to enter the uterus without much traumatism. The gauze, fetus, and secundines frequently come away together. If the fetus has been expelled the uterus is examined to see if it was empty, and, lacking hemorrhage and offensive discharge, it was so considered. A small offensive discharge did not require exploration if the uterus was small and well contracted. Exploration was made, when needed, by the finger. Watkins considers a small amount of secundines retained of less importance than it has been estimated. They will generally come away normally. The placenta forceps can be used if necessary, and he prefers it to the curette, and if the latter is employed it should be as large as can be used, as being safer. After the uterus is emptied no more uterine treatment is indicated. Douch-

ing is dangerous. The peritoneum is considered to be involved if there is pain, not otherwise. The supportive treatment consisted largely in building up physiologic resistance by a forced nutritious diet, attention to elimination, relief of pain, and general hygienic treatment, especially fresh air and sun baths. The system infection is much more important, generally, than the local. He and his associates believe that resistance is best increased by nutritious diet, and milk, beef juice and eggs are chiefly depended on. Care was taken to see that the patient slept six or eight hours out of the twenty-four hours. Codin or morphine were used to relieve pain, and fluids to stimulate elimination. If the patient does not take two quarts or more by the mouth in twenty-four hours, salines are given by the rectum. The drop method with the foot of the bed raised was sometimes used when postural drainage was not indicated. Care was always taken not to disturb the patient more than necessary. Vaginal section was done in eight of the sixty-one. Three of these had suppurative peritonitis and succumbed. In the other five it was performed when supportive treatment had not given the desired result. Abdominal section was done in three cases, once for intestinal obstruction. More than a third or less of the patients were a week or less under treatment. This included six fatal cases. Twenty were one to two weeks; nine, two to three weeks; two, three to four weeks; and twenty-one, five weeks; three, six weeks, and the remaining four from seven to twelve weeks. This gaev an average of sixteen days for all cases and seventeen days for those that recovered. Fifty-four recovered and seven did. The amount of medication used in all of them was comparatively small. Alcoholic beverages were seldom used and are believed to often do much harm. Tonics were rarely employed and then only to improve the appetite. Cathartics were not often used by the mouth, enemas being preferred. No classification into sapremic and septicemic cases or of cases before or at term is used in the paper, it being considered unnecessary and confusing. The experience has emphasized the importance of systematic over local infection and the danger of doing too much in these cases.

THE MANAGEMENT OF UREMIA.

E. F. Wells, Chicago (*Journal A. M. A.*, November 27), says that in making a diagnosis of chronic interstitial nephritis the physician should give his attention to the prophylaxis of uremia. He should inform the patient of the nature of the disease, give a tactful prognosis and directions as to the proper diet and general regimen. The diet should be individualized and arranged so as to maintain nutritive equilibrium as fully as possible with the smallest amount of proteid and carbohydrate foods. The liquids should be adjusted from time to time so as to help the elimination of waste materials and the regimen should consider residence, clothing, occupation, exercise, etc. Extraordinary care should be taken to avoid infectious disease. The physician should keep closely in touch with his patient, using modern methods of examination, and the patient should consult his physician promptly on the advent of any symptom, a list of which should be given to him. Wells does not believe in the probability of uremia occuring without such premonitions as can be detected by an alert observer. As is well known, the blood pressure is abnormally high in these cases. It can be reduced by various medicines, but ordinarily the high tension is conservative and should not be interfered with. In some cases, however, the rise is so rapid as to threaten danger to the weakened vessels, and in this case Wells advises artificial reduction by free bloodletting in urgent cases. In less urgent ones the slower methods may be used. The circulatory balance is seldom fully restored when once lost. Not infrequently circulatory insufficiency follows an acute infection or other depressing influences, without the patient experiencing the extreme tension above referred to. The part played by edema in the production

of uremia is important and Wells thinks special consideration should be accorded to its management in every case of nephritis. He recommends the following treatment from his experience which, however, may be varied to suit individual needs: During the first day the diet should consist of thin gruels, cream and water, vegetable soups, tea, coffee, cocoa, water and carbonated waters. From these there should be omitted the gruels on the second and soups on the third day; during the fourth and fifth days very little should be taken; on the sixth day the soups should be replaced and on the seventh day the gruels; later the ordinary careful dietary of the nephritic should be gradually restored. Every night of the first three days the patient takes 10 grains of mercurial mass, in two recently made pills of 5 grains each, followed by an efficient sodium or magnesium saline purge in the morning. Beginning on the fourth morning, after free action of the saline, there is given 1-30 grain pure elaterin hourly for three doses; 1-24 grain every two hours for three doses; finally, 1-18 grain every three hours until ten or twelve copious watery bowel movements have been induced. During the last series of doses the intervals may well be p. r. n., or as specially directed. Subsequent to the discontinuance of the medicine there will be several more of the liquid evacuations. The elaterin must be pure, and is preferably given in powder, with sugar of milk and finely powdered ammoniated glycyrrhizin. During the time the elaterin is being given the patient should remain in bed, using the pan. He should be informed of the abdominal distress, nausea and vomiting which the drug sometimes induces. Without giving rasons for the opinion Wells is sure that, if satisfactory results are to be secured, it will be well to follow closely the spirit of the suggestions in regard to diet, medicine and general regimen as detailed. He thinks that this treatment will usually drain a large amount of serum through the bowels, and during the period of alvine drain, renal activity is much reduced but later becomes greatly increased both in quantity and in area content. In some unsatisfactory cases this fails and the edema continues. The other symptoms also subside to the great relief of the patient but the full benefit is not experienced until about six weeks, and may continue for a long time. Careful medical management will augment the good effects of this treatment and properly directed exercise to keep up cellular activity will be advisable.

STOMACH CONTENTS.

J. W. Weinstein, New York (*Journal A. M. A.*, November 20), says that the microscopic and microscopic appearances of the gastric contents have been neglected by gastrologists while he finds them more diagnostic than the results of chemical examination. After describing the normal conditions as showing after a test breakfast, which give a uniform white, milky emulsion, almost odorless, which on standing separates into two almost equal layers, the bread at the bottom and a rather turgid liquid at the top, and which goes rapidly through a filter, he gives the microscopic examination of the normal stomach. The most satisfactory way is to use a solution of potassium iodid in the proportions of 1-10 of a gram of the iodid and 1-500 of a gram of resublimed iodin to 100 grams of distilled water. This stains all the starch and leaves the bacteria alone. Besides the starch granules a few yeast cells will be encountered. These closely resemble blood cells but are oval instead of round and usually appear in pairs. Red blood cells are usually very rare. In an empty condition, the stomach is usually collapsed, but by washings we may get a good deal of exfoliated epithelium, bacteria and mucus. Weinstein describes the pathologic stomach contents in detail. In hyperacidity of the stomach the contents gush out as soon as the tube passes the cardia, are profuse and watery with very little solid matter, and with a markedly acid odor. There may possibly be no food at all or little sand-like granules falling to the bot-

tom. These symptoms are diagnostic and he seldom attempts to extract all the stomach contents. Microscopic examination shows large-sized starch granules, abundant yeast cells, and a good many bacteria. This last does not indicate that the hydrochloric acid in the stomach acts as a bactericide. Weinstein attributes the bactericidal activity of the stomach rather to its motility. Gastric fermentation is not itself a disease but appears in a number of gastric conditions. The stomach contents in fermentation separate into three layers, the unfermented food at the bottom, a turgid layer above, and a third layer of fermented food particles, distended with gas, mixed with some mucus and fat. This condition occurs most frequently in cases of motor insufficiency due to obstruction and may also occur with a hyperacidity. In gastric ulcer the stomach contents may contain fresh blood, but this is rare. More often the contents have the coffee-ground appearance, due to the blood as affected by the gastric digestion. In interpretation of coffee grounds care must be taken to avoid deception and a chemical test may be necessary. Blood is not often found in stomach contents but it is more often seen in carcinoma. Black stools should be looked for rather than blood in the stomach. In case of motor insufficiency the stomach contents have usually a gray, dirty look, elements of food can be often recognized, and there are lots of fat globules, and the *Sarcinae ventriculae*, looking like bales of hay. These without Boas-Oppler bacilli indicate a benign condition. He disagrees with the opinion that microscopically, residual food is diagnostic of pyloric obstruction. Microscopic particles go readily through the obstruction unless it is complete. It is the larger particles of food that are the ones that will be left behind. In chronic gastritis the microscopic appearance of the stomach contents is diagnostic; they are very thick, very scanty and contain plenty of mucus. The microscopic examination is also distinctive, except in some cases of carcinoma. The mucus with large numbers of round and epithelial cells make up the pathognomonic picture. In carcinoma the contents are thick with very little gastric juice, as a rule, and large undigested particles of food, chiefly meal, are found. The coffee ground appearance is also often found and at times the contents come through the tube in molds like feces. The appearance sometimes resembles chronic gastritis but mucus is less abundant. The odor is offensive. Microscopically the characteristic is the presence of the Boas-Oppler bacillus which is found in most cases. Weinstein contradicts the prevalent idea that lactic acid and this organism always go together. In nervous dyspepsia and other gastric neuroses the stomach appearances are normal. The article is illustrated.

HYPERTENSION OF NEPHRITIS.

J. H. Musser, Philadelphia (*Journal A. M. A.*, November 27), says that the causes of hypertension in nephritis are unknown. The theories are based mainly on deductions from clinical experience and to a lesser extent on experiment. Neither of these, however, gives us conclusive evidence, but each in its way points to a reaction of some chemical substance influencing the circulation. What that is, we do not know. Clinically we notice that hypertension and heart hyperthrophy are encountered in that group of diseases in which uremia is also apt to occur, while both fail in practically all other types. In other words, hypertension, like uremia, is a sign of renal insufficiency. It naturally suggests itself that the poisons the the same, or if different, are due to the same causes. If the same, it may be possible to conceive that in small quantities it affects the vasomotor apparatus and in larger ones exerts its action on the nervous system. In support of this chemical theory it is frequently observed that the degree of the uremic manifestation has close relation with the blood-pressure and that true uremia rarely occurs without hypertension. The effect of diet is also suggestive. Rich protein diet

seems to increase tension in nephritis and makes the condition worse. All this probably means a retention of the products of nitrogenous metbolism and possibly of the undetermined or "rest" nitrogen. The increase of these substances in the blood in the renal diseases, in which the uremia occurs, suggests not only that they may be the cause of uremia and include also the substance causing increased tension. Another view, which he thinks may be dismissed briefly, is that which connects hypertension with an internal secretion of the kidney. Little evidence has been brought forward in its support. Another closely related theory which he also considers inadequatetly supported by the facts is that which connects adrenalin or similar substances with the hypertension. More evidence must be accumulated before a definite opinion in its favor is adopted. The almost constant presence of arteriosclerosis with hypertension in chronic interstitial nephritis is one of the chief difficulties in explaining the hypertension. It is still a question which is the primary condition, though the view that the kidney is secondarily affected, seems to be gaining ground. The renal disease following infectious diseases, in which the hypertension appears to be primary and the heart hypertrophy and arteriosclerosis secondary, throws some light on this subject. The hypertension of scarlatina is of special interest, since it comes on very early and at an age when arteriosclerosis can be ruled out. The only explanation which can be offered is increased peripheral resistance, a contraction of arterial terminations as a result of some chemical influence. The association of glomerular lesions with hypertension is also of interest and this has been emphasized by Schmidt and Loeb. This is an important field for investigation and experiments definitely show that the high pressure associated with glomerular lesions can not be explained by the elder theory of loss of vascular territory in the kidney. Loeb offers the following hypothesis: "Since the renal activity varies directly with the blood supply, lesions of the glomeruli would limit local vasodilation. When the renal activity demands more than the local conditions allow, the stimulus goes beyond the kidney and there is exerted reflexly a splanchnic contraction which leads to an increased systemic tension and then an increased flow of blood through the glomeruli." This explanation, Musser says, brings out prominently the fact that hypertension, whatever its cause, is essentially a conservative process, its object being to favor the maximum functioning power of the kidneys. All the theories except the one of vicarious renal secretion bring us back to the chemical or retention hypothesis but the substance retained its identity, nature, etc., is still a problem of the future.

Perforated Gastric and Duodenal Ulcers.

J. H. Gibbon and Francis T. Stewart Philadelphia (*Journal A. M. A.*, November 6), report their experience with 22 cases of perforated gastric and duodenal ulcers and discuss the pathology, symptoms, diagnosis and treatment of the condition. In their cases the perforation occurred in the anterior wall of the stomach in 15, and in the anterior wall of the first portion of the duodenum in 7. The size of the perforation varied from 1-16 to ½ inch in diameter. The authors beliefe that probably all perforations are minute at first and that they rapidly enlarge. Induration indicating chronic ulcer was present in all cases. The extravasation varied considerably according to the acuteness and duration of the perforation; in the earliest stages found at operation it consisted of the gastric contents. In the latter stages it was mixed with serum and pus, and in only one case with blood. In most cases a correct diagnosis was made before operation. In one, owing to the atypical symptoms, the condition was not at once recognized. The following are the diagnoses made in these cases before operation: perforated gastric or duodenal ulcer, 15; acute appendicitic, 4; diffuse perforative peritonitis, 2; pneumonia and bowel obstruction, 1. The his-

tory of previous indigestion for a long period, attacks of pain in the upper gastric region with vomiting; melena and more or less constant pain after eating will aid in turning attention to the stomach. In the slow perforations and early in the accute ones, the extravasated material passes down the right side of the abdomen over the omentum, or to the outer side of the colon to the right illac fossa, and here gives rise to pain, tenderness, and rigidity. Acute tenderness and rigidity however are always present over the site of the perforation. The attack begins with sudden severe pain, little relieved by sedatives, and a rigid board-like abdomen which later, with the advance of peritonitis, becomes distended. The pain is usually epigastric in the beginning and is apt to radiate to the back and sometimes to the right shoulder, suggesting billiary colic.. Distension is never present in the early stages, and when it does occur it indicates a peritonitis that is rarely recovered from. The absence of liver dullness with the signs is invaluable as an indication of perforation. The preservation of normal liver dullness is no indication that perforation is not present. Collapse is variable and should not beexpected. The temperature in early stages is usually subnormal or slightly raised. It is a mistake to expect high temperature, even in the later stages, though it may occur. The pulse is usually rapid and may be very weak if collopse occurs. Leucocytosis is not to be depended on, as it is not a specially early sign though, when possible, bloo dexamination should be made without delay. History of long continued indigestion, pain coming on at a fixed period after eating and at night after retiring should be inquired into. In only four of their cases was it proved absent and in two it could not be positively determined. Melena sometimes occurrs without other symptoms of ulcer and it should be inquired into. Age and sex are not diagnostic but contrary to what has been considered the rule, there were more men than women in this series. The immediate cause may be anything that increases the tension of the weakened gastric wall. In several cases it has occurred after drinking carbonated water. In the treatment early operation is insisted on opening the abdomen through the right rectus above the umbilicus. If the operator has been led by other symptoms to make an incision below the umbilicus, and finds conditions there not warranting the symptoms, he should at once turn to the somach and duodenum and make another incision above and assure himself that perforation has not occurred. The perforation having been found, it must be rendered accessible and closed at once. In simple cases with little induration a continuous suture may suffice, but in others the most carefully placed interrupted sutures are unsatisfactory on account of the friability of the tissues. In these cases an omental graft will be useful. The toilet of the peritoneum is described and in early cases simple cleansing, with limited irrigation or moist sponges, will suffice, in the author's belief. When virulent or extensive extravasation is discovered, general irrigation more or less is required. Evisceration is never indicated. Drainage is necessary except in occasional patients early operated on. If the pylorus or duodenum. is obstructed in the closure of the perforation, gastroenterostomy is indicated. This was done in four of their cases. When these conditions do not exist they oppose gastroenterostomy because, with proper after treatment, a cure can be nearly always obtained. Even with considerable constriction of the pylorus, liquids will pass and the tract will open up later, with the healing of the ulcer, to its normal capacity. A subsequent gastroenterostomy may have to be done sometimes because of recurrence of the symptoms. The after treatment is that of any case of peritonitis, except that rectal feeding is indicated in all cases in which closure without gastroenterostomy is done. In the author's later cases liquid nourishment was given by the mouth at a much earlier period than in the first ones reported. The authors differ a little in the matter of posture, Stewart preferring the right lateral one and Gibson

using the Fowler position when pelvic drainage is used. The posture must be influenced to some extent by the situation of the drains. A pelvic drain was used, in addition to the gastric, at the site of perforation in 15 of their cases. In one of their successful cases no drainage was employed. They had 10 deaths in their 26 cases; 6 of the deaths within twenty-four hours, presumably on account of peritonitis. Of the other patients, one diied from general sepsis, one from extension of the peritonitis, one after a second operation for obstruction, and one from delirium tremens, the abdominal condition being satisfactory.

CONGENITAL PYLORIC SPASM.

D. J. Milton Miller, Atlantic City, New Jersey (*Journal A. M. A.*, November 20), reports two cases of what he thinks may be considered simple pyloric spasm, pointing out the difference between this condition which yields readily to medical treatment, dietetic and otherwise, as distinguished from the more serious hypertrophic stenosis of the pylorus. Notwithstanding that Heubner places the incidence of pyloric spasm as but 0.5 per cent. of all children's diseases, the condition he says is not so very uncommon and a physician who sees many sick babies must encounter it from time to time. Though usually separable clinically, pyloric spasm and congenital hypertrophic pyloric stenosis are closely akin genetically to each other. The subjects are usually males and are commonly breast fed. The vomiting begins from the third day to the third week or later. It is without apparent cause and may be very acid or unaltered and is often expulsive or projectile and may exceed the amount ingested. There is obstinate or partial constipation, according to the amount of narrowing or spasm. Signs of indigestion are usually absent, at least in the early stages. Exaggerated gastric peristalsis is almost always sooner or later observed and in the minority of cases a swelling is felt in the pyloric region. There is rapid loss of flesh corresponding to the amount of vomiting. Pain is often present and the food remains in the stomach longer than the usual time. There are the symptoms in both types and they differ entirely from the habitual or chronic vomiting in infancy due to indigestion, of which there is evidence which is lacking here. There may be a distinct anatomic change in the pylorus and yet recovery take place, as in the case of Batten where hypertrophy of the pylorus was found at autopsy long after recovery from symptoms. It is probable that in all cases there is some pathologic alteration, though it may be very slight, causing, under certain conditions, incoordination of the pyloric muscle and the adjoining gastric wall, resulting in spasms. The relation of the simple curable spasm and the actual stenosis calling for operation is therefore only one of degree. The diagnosis between the two may sometimes be difficult, but usually, if in a given case, a normal or fair amount of fecal matter is passed, it may be concluded that the case is one of spasm or that no great narrowing exists. The treatment is almost entirely dietetic, and patient dietetic experimentation, as Koplik has shown, seems to be the keynote of success. The feeding of these infants, as generally taught, should be small and at short intervals, but Miller thinks it is best to feed only when the stomach is known to be empty. This can be ascertained by the passage of the tube or by observing the time at which the last vomiting occurs after a meal, and by always postponing the feeding if vomiting takes place just before or at the time it is due. The amount to be given is that which observation teaches us will not be ejected in any great quantity. In this way the irritability of the stomach is gradually overcome and larger amounts can be given. Theoretically, the infant will not gain flesh on the small amounts, but practically he finds that it does, because, especialy in severe cases, not half or one-third of the quantity ingested is retained. Breast milk, given according to the plan described, is the ideal food and if that from one wet nurse does not agree, another should be tried. In

artificial feeding a food which is free from curds and will form no coagulum in the stomach should be selected. Whey is such a food, to which completely peptonized fat-free milk and later cream may be cautiously added. Buttermilk is effective in many cases and lime water is, he thinks, a valuable addition to the diteary. Citrate of sodium, one to two grains to each ounce of milk, has been recommended. It has the advanage of less bulk and its value is shown in one of the reported cases by the increased emesis when it was withdrawn. Stomach washing has been highly recommended by some authors and condemned by others, and Miller found it a valuable resource. It may be so effective in allaying spasm, however, as to confuse the diagnosis and cause mistakes as to the gravity of the case. Lavage should be practiced daily at first and later when there is an increase of the vomiting or food remains in the stomach from one feeding to another. Warm applications and poultices at time of feeding and for a little after gave considerable comfort. In conclusion, Miller advises patience and perseverence. Though the question of surgical intervention may have to be considered, operation should be postponed so long as the infant is not actively and continuously losing weight.

BOOK REVIEWS

Listing of books and pamphlets received is considered full compensation. Reviews will be made at the discretion of the staff.

A Text-book upon the Pathogenic Bacteria. By Joseph McFarland, M.D., Professor of Pathology and Bacteriology in the Medico-Chirurgical College, Philadelphia. Sixth Edition. W. B. Saunders Company, Philadelphia and London. 1909.

This, the sixth edition of this well known work, needs little introduction to its thousands of readers. It describes fully such organisms as can be proven to be pathogenic, by the lesions or toxins produced by them, omitting consideration of the non-pathogenic forms, but mentioning those species with which those causing disease may confounded. Consideration of the higher parasites is omitted; to use the author's own words, "malaria and amebic dysentery are omitted as logically as tape worms and pediculi."

While essentially a work for students, it meets the needs of the practitioner who desires to keep up with the advances in bacteriology.

Only a comparatively small amount of additional material was found to be needed to bring the work up-to-date, as the previous edition was issued only three years ago, but many minor additions have been made, and an entire chapter on opsonins has been added. By some mistake, no mention of this chapter is made in the table of contents, but its matter appears in the index. In the chapter on staining, mention is made of several organisms that do not stain by Gram's method, and Rossi's method of staining flagella is given. Much new matter is added to the chapter on the determination of bacteria in water, and a new test of the value of disinfectants is given. Specific therapy and immunization is discussed in connection with those organisms where progress has been made, the treatment of tuberculosis being discussed at length and the various products of the tubercle bacillus fully described. The book is well illustrated twenty-one illustrations being added and many new ones substituted for those in previous editions. The bibliography has also been brought up-to-date. R. L. J.

Causes of Disability. By Charles Hamilton Harbaugh, M. D. The Overbrook Publishing Company, Philadelphia, Pa.

struction to those already interested, as well as to the many who are subsequently to become insurance examiners, has been anticipated and fully met by Dr. Harbaugh's work. In this book of 650 pages may be found considerable information upon practically all subjects having a direct or indirect bearing upon the questions constantly confronting an insurance examiner.

The book is divided into twenty-three chapters, the first five of which deal with such subjects as are of vital importance to the physician as a representative of an insurance company. The remainder of the book covering in a brief way the injuries and diseases caused by accidents and resulting in disability; all of which is clearly stated. The author does not discuss etiology, pathology or treatment, but rightly confines himself to a discussion of the means and methods of recognition of the various accidents, injuries or diseases which result in or cause disability. P. B.

Myomata of the Uterus. By Kelley-Cullen.

This book has been carefully read and to the mind of the reviewer is the most valuable contribution ever published on the subject. It represents alone the experience of the two authors, and the concise manner in which the subject is placed, makes it a most pleasing book to read. While the work is limited because it treats of a specialty, yet Myomata are so frequent and their complications so varied, it is essential for any well informed general practitioner to be thoroughly familiar with the subject. It is a reference book that should be found in everyone's library. L. E. B.

Bandler's Medical Gynecology.

The author states in his preface that the object of this book is to represent the non-operative side of Gynecology. The book, as a whole, is well written, and contains much valuable information. The articles on "Associated Nervous Conditions" and "Constipation" are an improvement on anything that has been written on these subjects. It is a work about which many good things may be said, and few adverse criticisms justly mentioned. On page 408, the following sentence is found: "If at any time the Fallopian tubes become distended with pus, and sink to the floor of the pelvis, futher delay, with conservative treatment, should not be practised. The patient should be anaesthetized, and the cul-de-sac of Douglas widely opened. The tubes should then be incised and evacuated." The reviewer doubts the propriety of a medical work describing the technique of a surgical operation, and this is especially true in this case, when the technique described is open to criticism. The work will be a valuable addition to any one's library. In conclusion, however, the reviewer is frank in stating that the title of the book should be altered, and the word, "Medical" left out, for any work on this subject, as thorough and complete as this, and which fully describes the conditions that are surgical in nature, is bound to be misnamed if the term "Medical" is used

L. E. B.

International Clinics. A quarterly of illustrated clinical lectures and especially prepared original articles on practical subjects by leading members of the medical profession throughout the world. Vol. IV., 19th series, 1909. J. B. Lippincott Co., Philadelphia.

Volume IV. contains twenty-seven articles on Treatment, Medicine, Surgery, Roentgenology, Gynecology, and Obstetrics, Genito-Urinary Diseases, Paediatrics, Parasitology, Laryngology, and Pathology.

J. M. K.

BOOKS RECEIVED.

Serum Diagnosis of Syphilis and Butyric Acid Test for Syphilis. By Hideyo Noguchi, M.D., M.Sc. Associate Member of the Rockefeller Institute for Medical Research, New York. Contains 175 pages with 14 illustrations. Published by J. B. Lippincott Company, Philadelphia, Pa.

Handbook of Therapy. Cloth, price $1.50; 421 pages. American Medical Association, Chicago, Ill.

New and Non-Official Remedies, 1910; containing descriptions of articles which have been accepted by the Council on Pharmacy and Chemistry of the American Medical Association prior to January 1, 1910. Price, paper, 25 cents; cloth, 50 cents; 256 pages. American Medical Association, Chicago, Ill.

PUBLISHERS' DEPARTMENT

SANITATION IN THE SOUTH.

The public mind is strangely neglectful of the important question of sanitation. This has been especially true of the Southern States, and carelessness on this important point is less apparent here than in the more densely populated districts of the North and East. The health boards of our cities and towns, usually so alive to the sanitary condition of their sections have failed to see any cause for alarm because waste matter, decaying vegetation, kitchen garbage, hospital slops full of deadly disease germs, refuse from soap factories, tanneries and industrial enterprises, and even the carcasses of dead animals daily pollute the flowing streams from which towns and cities derive their drinking water. Thinking men and women have occasionally sounded the alarm, but in each case they were looked upon as extremists and their protests were always met with the argument for so long considered final, that "water clarifies and purifies as it flows." Sanitary experts, however, have been relentless in their efforts to show that, while water does have a tendency to clarify, the organic matter forming a sediment at the bottom furnishes an inexhaustible source from which the water, passing over, continually draws a supply of impurities laden with disease germs which are borne on to contaminate the water supply of some town further down the stream. The disease germ is in no way affected by its short stay in the flowing water, but reaches its destination alive and full of vitality ready to begin its deadly work when taken into the human system. It is easily possible, then, to trace the cause of an epidemic of typhoid fever in a town, drawing its water supply from a river, to the bedroom of a typhoid patient thirty to fifty miles up stream because the slops from the sick room were emptied into the river and the germs found their way into the town reservoir. Because of the existence of such facts, sanitary experts have at last proven conclusively that the question of the proper disposition of such slops is one of greatest moment. Public sentiment is gradually coming to the conclusion that every possible means of guarding streams should be adopted. This awakening of the public mind to the dangers of using the common water supply of towns has made it possible for springs and ice factories with their distilled waters to reap a rich harvest from a public vainly endeavoring to avoid possible infection. But not one-tenth of the people in a community are able to avail themselves of these distilled waters, and therefore, while the results were apparent among a certain class, the average of fever and kindred diseases among the poorer classes has continued at the same high figure.

Many minds have been busy with the question of disposing of waste matter cheaply and effectively—to prevent passing the pollution on to another section. However, no satisfactory method was found until the government succeeded in preventing an outbreak of typhoid fever at the army maneuvers held at Chickamauga Park, Ga., in 1906. The success of the Sanitary Corps upon this occasion was noteworthy. During the Spanish-American war in 1898 100,000 troops had been stationed on this camp ground, and, through the ignorance and inexperience of the army officials regarding proper methods of sanitation, the

soldiers fell an easy prey to preventable disease. As a result, train loads of typhoid patients were sent to the General Hospital at Fort McPherson, Atlanta, Ga. At one time 1,500 typhoid patients were in the hospital with a death rate from three to five per day. It was easy to discover the cause. The sanitation was of the worst kind. At this camp ground the old camp sink of Civil War times was used—a pit in the earth eight feet deep, ten feet long and three feet wide. Flies would swarm to the pits, walk over the excreta, then go to the kitchens and dining rooms, leaving in their wake the germs of typhoid fever. Of course the food received its share as well as the water. Thus it was that there were two sources of infection for the men and an epidemic of typhoid fever resulted.

Similar experiences at other camps in the United States and the Philippine Islands caused the army officials to take deep interest in the situation and experiments in camp sanitation were made. A number of devices were tried. It was finally observed that thorough screening against germ laden insects and the incineration of all waste matter was the only way in which disease could be avoided. A device, patented by Dr. J. H. McCall, of the United States Medical Corps, was found to be the most effective means for producing the desired results, so his invention was adopted for the use of the field troops, seventy-two of the portable machines—incinerators—being installed at Chickamauga Park. The device was then given a thorough test under actual field conditions.

The 9,000 men stationed at the camp made constant use of the incinerators, and all kitchen garbage was likewise burned, the solid portions being reduced to ashes and the liquid portions evaporated, and not a single case of typhoid fever developed—a most wonderful record when compared with that of the troops stationed on the same camp ground in 1898, during the Spanish-American War.

Profiting by the object lesson furnished by the government, the South has been making its sanitary fight along the same lines—incineration and screening. Interest in the former has grown to such an extent that a company capitalized for half a million dollars was recently organized in Nashville, Tenn., for the manufacture of the incinerators or creamatories in all sizes and styles needed to meet every condition, from the crowded school or factory to the small private family.

The discovery that the dreaded yellow fever is communicated by the Stegomyia Fasciata (yellow fever mosquito) has also brought the need of perfect sanitation before the public mind. Working along the lines adopted by Col. William C. Gorgas, Medical Corps, United States Army, who deserves the gratitude of the entire world for his work in Cuba, by which he transformed Havana from a plague center into a beautiful and healthful city, an epidemic of yellow fever, which seemed to have gained a firm foothold in New Orleans, has recently, been stamped out quickly and effectively.

The recent discovery of hookworm disease in the South has opened a new field for the sanitary expert. Such authorities as C. Wardell Stiles, Ph.D., whose work along this line interested John D. Rockefeller to the extent that he appropriated $1,000,000 for the eradication of the disease, and Major Bailey K. Ashford, for the Medical Corps of the United States, claim that hookworms do not multiply in the human system, needing oxygen for their development, but their eggs are evacuated daily by the hundreds and thousands by the victims of the disease. Incineration of the eggs and their ova is the only sure preventative of the spread of the disease, and this being in direct line with the fight that the South is making for the securing of a pure drinking supply through the prevention of soil pollution, the new disease is sure to be stamped out as sanitary conditions improve. With the aid of the million dollars to be spent by the Rockefeller Sanitary Commission an educational campaign can be inaugurated that will instruct each man, woman and child in the South in

regard to the nature of the disease and impress the fact upon each one that it is only by personal work and co-operation in preventing soil pollution that we can remove the conditions that have so long been a stigma on the name of our fair Southland.

W. B. Saunders Company, the medical publishers of Philadelphia and London, have just issued a new edition—the thirteenth—of their handsome illustrated catalogue. It contains some twenty new books and new editions, and besides numerous black-and-white illustrations, there are two color cuts of special value. We strongly advise every physician to obtain a copy—sent for the asking. It will prove a ready guide to good medical books—books that we all need in our daily work.

Post-Operative Support in Abdominal Cases.—The adaptation of the abdominal supporters to make it serviceable to the surgeon as an early substitute for self-applied dressings after major abdominal and pelvic operations, and to the obstetrician after delivery, has been effected successfully through the ingenuity of Dr. Katherine L. Storm. The Storm binders are firm, they give real support, but they are made of strong, soft goods and are free from unyielding and badly placed braces and stiff seams which have characterized most efforts along the line, and which make for greater discomfort than is justified by the good purposed. While the Storm binders are made for those who need abdominal support, other than the classes mentioned above, they are especially attracting attention in the profession because they are so eminently serviceable along the lines indicated; the surgeons of New York, Philadelphia and Boston are generally adopting them in their routine work, their introduction in the Middle West bids fairs to gain them the same popularity here.—Medical Fortnightly.

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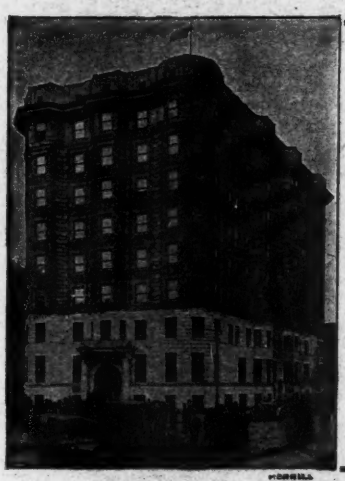

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